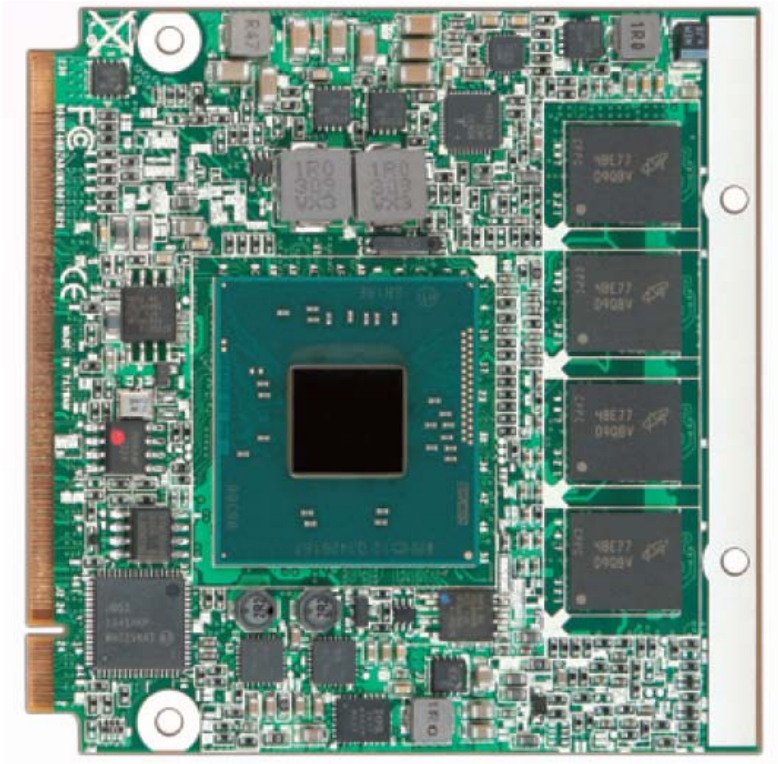
PQ7-M106IE/IL-E Series

User's Manual



Version 1.0

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Appendix A

How to Use This Manual

The manual describes how to configure your PQ7-M106IE/IL-E series to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of this Q7 Module.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2 : Hardware Configuration. Describes the definition and location for Jumpers that you can easily configure your system.

Chapter 3 : System Installation. Describes the CPU, main memory SKU to get a clear information.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

The content of this manual and EC declaration document is subject to change without prior notice. These changes will be incorporated in new editions of the document. **Portwell** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions will be shown on the following web site : http://www.portwell.com.tw

Chapter 1
System Overview

1.1 Introduction

QSEVEN, a new industrial computer platform in "Module board" and "Carrier board" architecture, equipped processor or its socket, chipset, memory or memory socket and single Ethernet controller on it. The On-The-Shelf Module board allows users to create their own Carrier board easily and quickly since most critical parts are ready on Module board. QSEVEN Module board offers expansion interfaces such as PCI Express, SATA, LPC, LVDS, USB, SDVO and Audio etc. that could support variety functions depending on Carrier board design.

The Carrier board was customized design to fit in different mechanical requirements. In the meanwhile, its variety functions were also customized to meet the application. Compares to the platform that designed from nothing, QSEVEN architecture platform only needs to develop Carrier board. Users could keep their know-how which related to their core competence in the Carrier board.

PQ7-M106IE/IL-E series equipped Intel Tunnel Creekchipset with Atom BayTrailprocessor on-board), 2GB DDR3 memories (up to 8GB) on-board, one Gigabit Ethernet controller on it to provide expansion interfaces – PCI Express x1.

1.2 Check List

The PQ7-M106IE/IL-E series package should cover the following basic items

One PQ7-M106IE/IL-E series module board

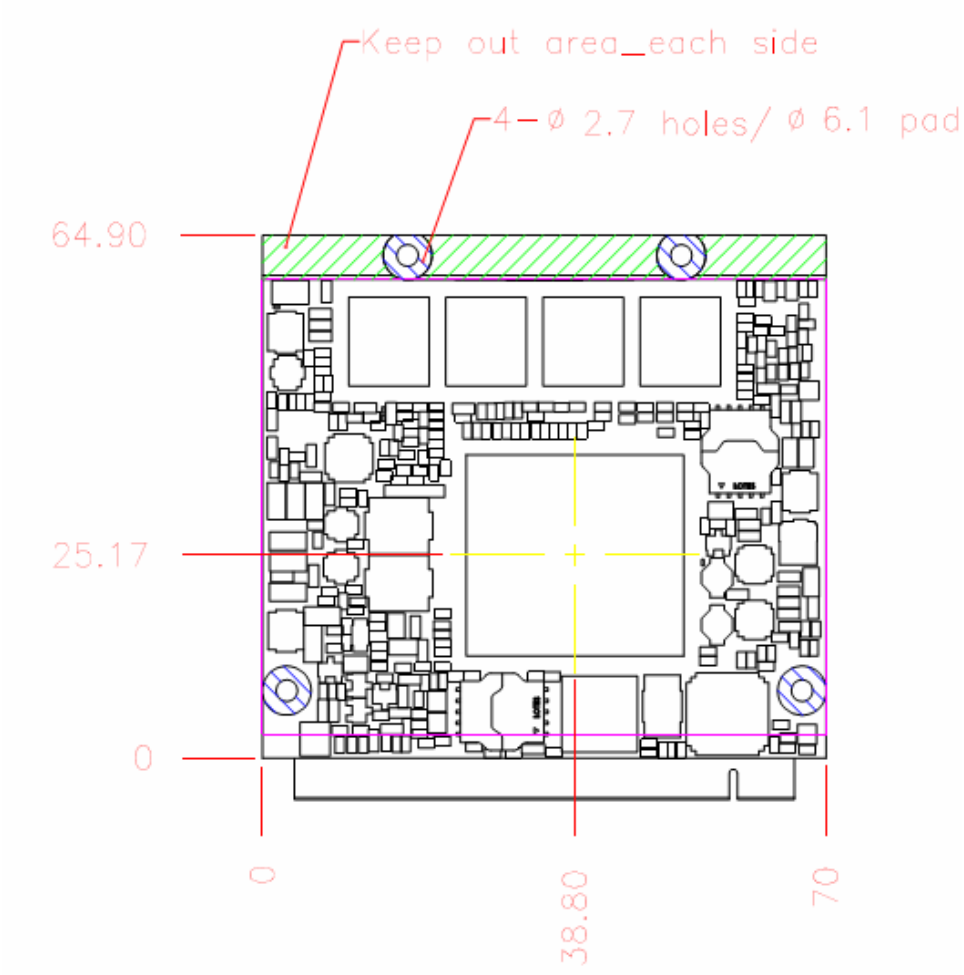
If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

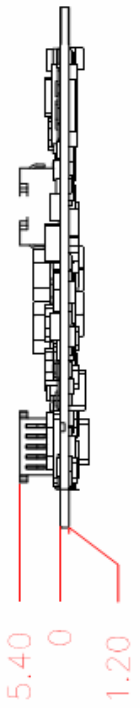
1.3 Product Specification

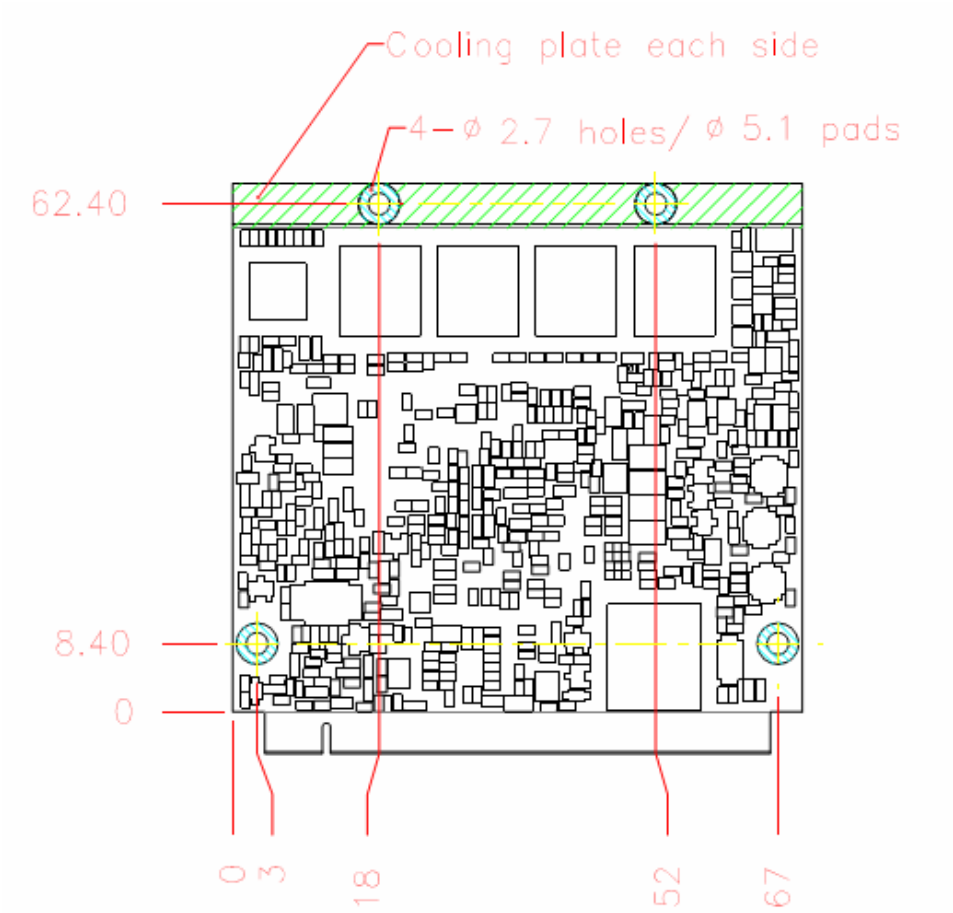
- **Main processor**
  - Intel® Atom BayTrail Processor SOC
- **Main Memory**
  - Onboard DDR3 up to 8GB
- **L2 Cache Memory**
  - 512KB~2MB L2 Cache, Build-in processor

- **Expansion Interfaces**
  - PCI Express
    - •Four PCI Express x1 links
  - LVDS (PQ7-M106IL-E)
    - • Supports maximum 80MHz Dual channel LVDS interface
    - • Single channel LVDS interface support: 24 bpp
    - • Maximum Panel resolution supported up to 1920 x 1080
  - SDVO (Serial Digital Video Output)
    - •A maximum pixel clock of 160 MHz is supported on the SDVO interface.
  - Ethernet
    - •Intel I210ITGigabit Ethernet controller is equipped
  - USB Interface
    - •Support Six USB 2.0 ports and One USB 3.0 port
  - SATA Interface
    - •Support Two SATA ports with 3-Gbps Generation 2 and AHCI.
    - •Option eMMC storage onboard, up to 16GB capacity (PO7-M106IE)
- **Outline Dimension (L X W):**
  - 70mm x 70mm
- **Operating Temperature:**
  - 40°C ~ 85°C
- **Storage Temperature:**
  - 40°C ~ 85°C
- **Relative Humidity:**
  - 5% ~ 90%, non-condensing

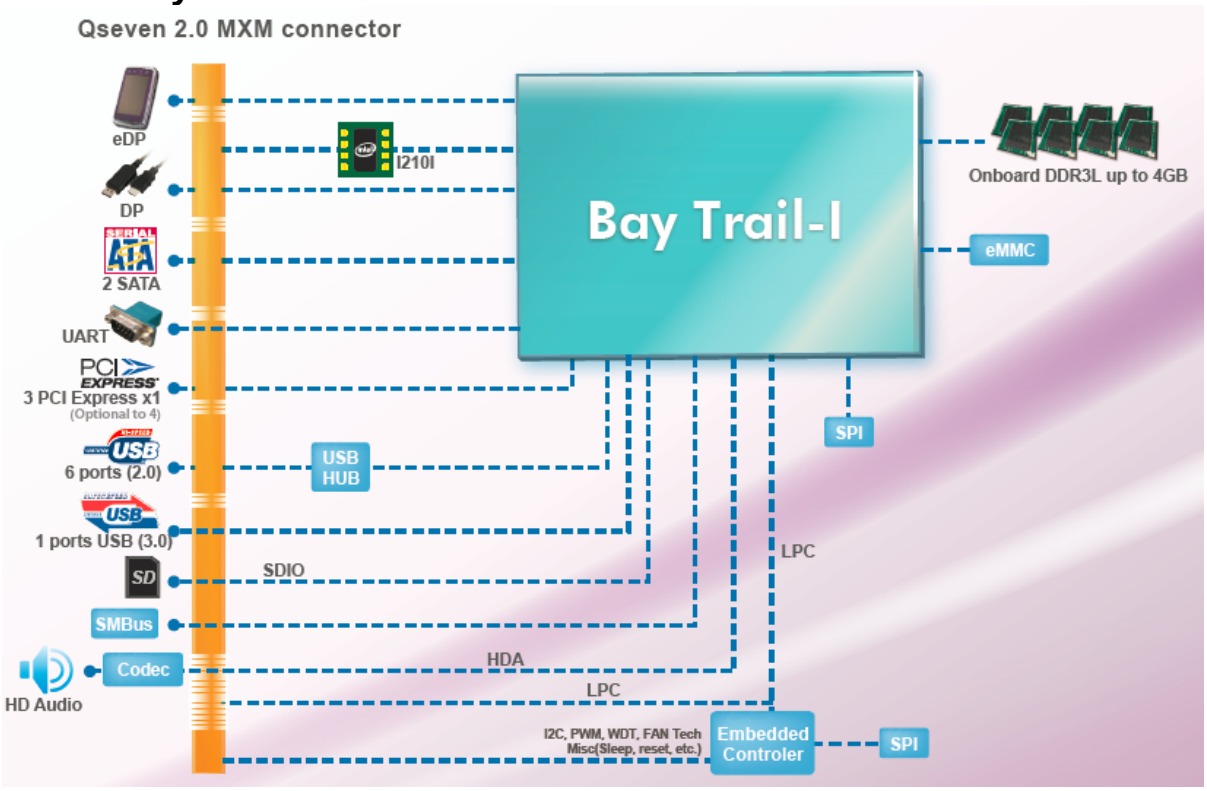
1.4 Mechanical Drawing



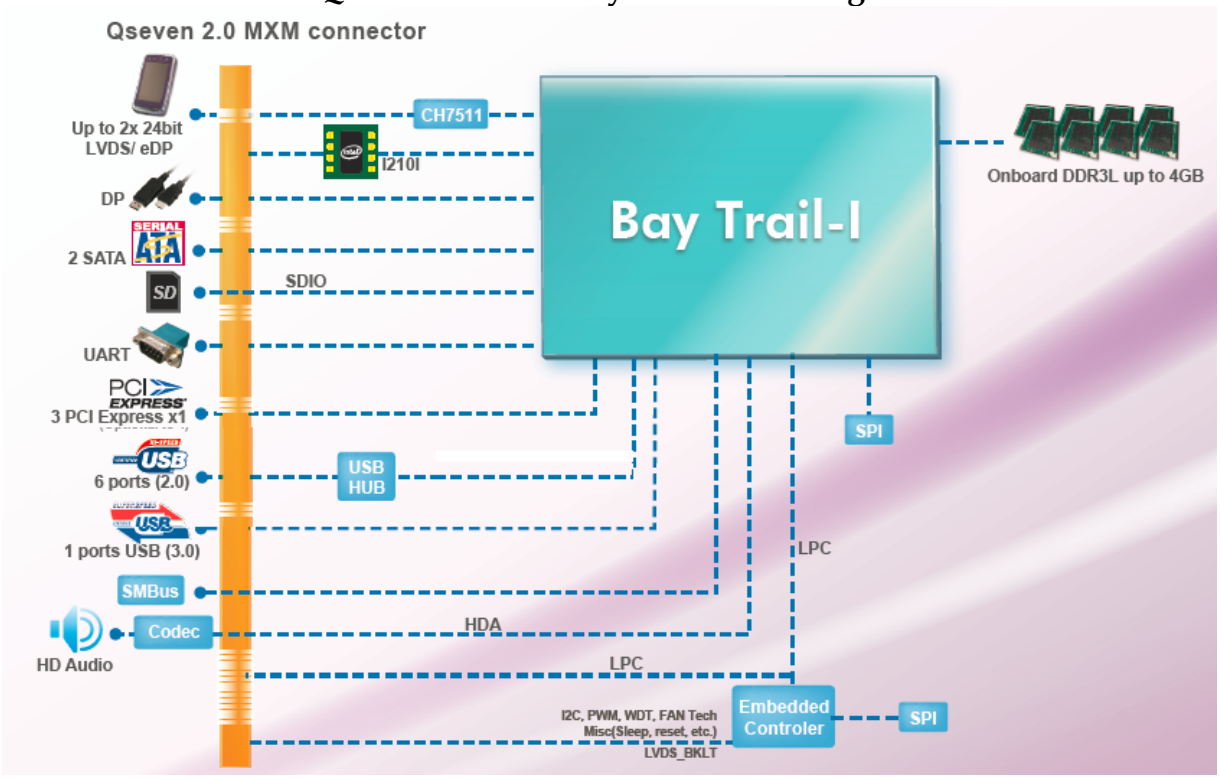



Cooling plate each side
4-ø 2.7 holes/ ø 5.1 pads
62.40
8.40
0
0
3
18
52
67

1.5 System Architecture



PQ7-M106IE Series System Block Diagram



PQ7-M106IL-E Series System Block Diagram

Chapter 2
Hardware Configuration

This chapter gives the definitions and shows the positions of jumpers, headers andconnector. The default settings shipped from factory are marked.

2.1 Pin definition

	PQ7-M106IE	PQ7-M106IL-E
1	GND	GND
3	GBE_MDI3-	GBE_MDI3-
5	GBE_MDI3+	GBE_MDI3+
7	GBE_LINK100#	GBE_LINK100#
9	GBE_MDI1-	GBE_MDI1-
11	GBE_MDI1+	GBE_MDI1+
13	GBE_LINK#	GBE_LINK#
15	GBE_CTREF	GBE_CTREF
17	WAKE#	WAKE#
19	SUS_STAT#	SUS_STAT#
21	SLP_BTN#	SLP_BTN#
23	GND	GND
25	GND	GND
27	BATLOW#	BATLOW#
29	SATA0_TX+	SATA0_TX+
31	SATA0_TX-	SATA0_TX-
33	SATA_ACT#	SATA_ACT#
35	SATA0_RX+	SATA0_RX+
37	SATA0_RX-	SATA0_RX-
39	GND	GND
41	BIOS_DISABLE#	BIOS_DISABLE#
43	SDIO_CD#	SDIO_CD#
45	SDIO_CMD	SDIO_CMD
47	SDIO_PWR#	SDIO_PWR#
49	SDIO_DAT0	SDIO_DAT0
51	SDIO_DAT2	SDIO_DAT2
53	SDIO_DAT4 (NC)	N/A

55	SDIO_DAT6 (NC)	N/A
57	GND	GND
59	HAD_SYNC	HAD_SYNC
61	HAD_RST#/	HAD_RST#/
63	HAD_BITCLK#	HAD_BITCLK#
65	HAD_SDI	HAD_SDI
67	HAD_SDO	HAD_SDO
69	THRM#	THRM#
71	THRMTRIP#(NC)	N/A
73	GND	GND
75	USB_SSTX0-	USB_SSTX0-
77	USB_SSTX0+	USB_SSTX0+
79	USB_6_7_OC# (NC)	N/A
81	USB_P5-	USB_P5-
83	USB_P5+	USB_P5+
85	USB_2_3_OC#	USB_2_3_OC#
87	USB_P3-	USB_P4-
89	USB_P3+	USB_P4+
91	USB_CC (NC)	N/A
93	USB_P1-	USB_P1-
95	USB_P1+	USB_P1+
97	GND	GND
99	eDP0_TX0+	LVDS0_CHA_TXP0
101	eDP0_TX0-	LVDS0_CHA_TXN0
103	eDP0_TX1+	LVDS0_CHA_TXP1
105	eDP0_TX1-	LVDS0_CHA_TXN1
107	eDP0_TX2+	LVDS0_CHA_TXP2
109	eDP0_TX2-	LVDS0_CHA_TXN2
111	LVDS_PPEN	LVDS0_VDDEN
113	eDP0_TX3+	LVDS0_CHA_TXP3
115	eDP0_TX3-	LVDS0_CHA_TXN3
117	GND	GND
119	eDP0_AUX+	LVDS0_CHA_CLKP
121	eDP0_AUX-	LVDS0_CHA_CLKN
123	DDI1_BKLT_CTRL	DDI1_BKLT_CTRL_3P3
125	GP2_I2C_DAT/LVDS_DID_DAT (NC)	DDC_SDA_PTN

127	GP2_I2C_CLK/LVDS_DID_CLK (NC)	DDC_SCL_PTN
129	CAN0_TX (NC)	N/A
131	DP_LANE3+ /TMDS_CLK+	DDI0_TXP3
133	DP_LANE3- /TMDS_CLK-	DDI0_TXN3
135	GND	GND
137	DP_LANE1+ /TMDS_LANE1+	DDI0_TXP1
139	DP_LANE1- /TMDS_LANE1-	DDI0_TXN1
141	GND	GND
143	DP_LANE2+ /TMDS_LANE0+	DDI0_TXP2
145	DP_LANE2- /TMDS_LANE0-	DDI0_TXN2
147	GND	GND
149	DP_LANE0+ /TMDS_LANE2+	DDI0_TXP0
151	DP_LANE0- /TMDS_LANE2-	DDI0_TXN0
153	DP_HDMI_HPD#	DDI0_HPD#
155	PCIE_CLK_REF+	PCIE_CLK_REF+
157	PCIE_CLK_REF-	PCIE_CLK_REF-
159	GND	GND
161	PCIE3_TX+	PCIE3_TX+
163	PCIE3_TX-	PCIE3_TX-
165	GND	GND
167	PCIE2_TX+	PCIE2_TX+
169	PCIE2_TX-	PCIE2_TX-
171	UART0_TX	UART0_TX
173	PCIE1_TX+	PCIE1_TX+
175	PCIE1_TX-	PCIE1_TX-
177	UART0_RX	UART0_RX
179	PCIE0_TX+	PCIE0_TX+
181	PCIE0_TX-	PCIE0_TX-
183	GND	GND
185	LPC_AD0	LPC_AD0
187	LPC_AD2	LPC_AD2
189	LPC_CLK	LPC_CLK
191	SERIRQ	SERIRQ
193	VCCRTC	VCCRTC
195	FAN_TACHOIN	FAN_TACHOIN
197	GND	GND

199	SPI_MOSI	SPI_MOSI
201	SPI_MISO	SPI_MISO
203	SPI_SCK	SPI_SCK
205	VCC_5V_SB	VCC_5V_SB
207	MFG_NC0 (VGA_VSY Rserved)	VGA_VSY
209	MFG_NC1 (VGA_HSY Rserved)	VGA_HSY
211	VCC	VCC
213	VCC	VCC
215	VCC	VCC
217	VCC	VCC
219	VCC	VCC
221	VCC	VCC
223	VCC	VCC
225	VCC	VCC
227	VCC	VCC
229	VCC	VCC
2	GND	GND
4	GBE_MDI2-	GBE_MDI2-
6	GBE_MDI2+	GBE_MDI2+
8	GBE_LINK1000#	GBE_LINK1000#
10	GBE_MDI0-	GBE_MDI0-
12	GBE_MDI0+	GBE_MDI0+
14	GBE_ACT#	GBE_ACT#
16	SUS_S5# (SUS_S4#)	KBC_SLP_S4#
18	SUS_S3#	KBC_SLP_S3#
20	PWRBTN#	PWRBTN#
22	LID_BTN#	LID_BTN#
24	GND	GND
26	PWGIN	PWGIN
28	RSTBTN#	RSTBTN#
30	SATA1_TX+	SATA1_TX+
32	SATA1_TX-	SATA1_TX-
34	GND	GND
36	SATA1_RX+	SATA1_RX+
38	SATA1_RX-	SATA1_RX-

40	GND	GND
42	SDIO_CLK#	SDIO_CLK#
44	SDIO_LED (NC)	N/A
46	SDIO_WP	N/A
48	SDIO_DAT1	SDIO_DAT1
50	SDIO_DAT3	SDIO_DAT3
52	SDIO_DAT5 (NC)	N/A
54	SDIO_DAT7 (NC)	N/A
56	RSVD	N/A
58	GND	GND
60	SMB_CLK	SMB_CLK
62	SMB_DAT	SMB_DAT
64	SMB_ALERT#	SMB_ALERT#
66	GP0_I2C_CLK	KBC_SCL1
68	GP0_I2C_DAT	KBC_SDA1
70	WDTRIG#	WDTRIG#
72	WDOUT	WDOUT
74	GND	GND
76	USB_SSRX0-	USB_SSRX0-
78	USB_SSRX0+	USB_SSRX0+
80	USB_4_5_OC#	USB_4_5_OC#
82	USB_P4-	USB_P4-
84	USB_P4+	USB_P4+
86	USB_0_1_OC#	USB_0_1_OC#
88	USB_P2-	USB_P2-
90	USB_P2+	USB_P2+
92	USB_ID (NC)	N/A
94	USB_P0-	USB_P0-
96	USB_P0+	USB_P0+
98	GND	GND
100	eDP1_TX0+ /LVDS_B0+ (NC)	LVDS0_CHB_TXP0
102	eDP1_TX0- /LVDS_B0- (NC)	LVDS0_CHB_TXN0
104	eDP1_TX1+ /LVDS_B1+ (NC)	LVDS0_CHB_TXP1
106	eDP1_TX1- /LVDS_B1- (NC)	LVDS0_CHB_TXN1
108	eDP1_TX2+ /LVDS_B2+ (NC)	LVDS0_CHB_TXP2
110	eDP1_TX2- /LVDS_B2- (NC)	LVDS0_CHB_TXN2

112	LVDS_BLEN	LVDS0_BACKLIGHT_EN
114	eDP1_TX3+ /LVDS_B3+ (NC)	LVDS0_CHB_TXP3
116	eDP1_TX3- /LVDS_B3- (NC)	LVDS0_CHB_TXN3
118	GND	GND
120	eDP1_AUX+ /LVDS_B_CLK+ (NC)	LVDS0_CHB_CLKP
122	eDP1_AUX- /LVDS_B_CLK- (NC)	LVDS0_CHB_CLKN
124	GP_1-Wire_Bus (NC)	N/A
126	eDP0_HPD#	VGA_DDC_DAT
128	eDP1_HPD#/LVDS_BLC_CLK (NC)	VGA_DDC_CLK
130	CAN0_RX (NC)	N/A
132	RSVD	N/A
134	RSVD	N/A
136	GND	GND
138	DP_AUX+	DP_AUX+
140	DP_AUX-	DP_AUX-
142	GND	GND
144	RSVD	N/A
146	RSVD	N/A
148	GND	GND
150	DDI0_DDC_SDA	DDI0_DDC_SDA
152	DDI0_DDC_SCL	DDI0_DDC_SCL
154	RSVD	N/A
156	PCIE_WAKE#	PCIE_WAKE#
158	PCIE_RST#	PCIE_RST#
160	GND	GND
162	PCIE4_RX+	PCIE4_RX+
164	PCIE4_RX-	PCIE4_RX-
166	GND	GND
168	PCIE3_RX+	PCIE3_RX+
170	PCIE3_RX-	PCIE3_RX-
172	UART1_RTS#	UART1_RTS#
174	PCIE2_RX+	PCIE2_RX+
176	PCIE2_RX-	PCIE2_RX-
178	UART1_CTS#	UART1_CTS#
180	PCIE1_RX+	PCIE1_RX+
182	PCIE1_RX-	PCIE1_RX-

184	GND	GND
186	LPC_AD1	LPC_AD1
188	LPC_AD3	LPC_AD3
190	LPC_FRAME#	LPC_FRAME#
192	LPC_LDRQ# (NC)	N/A
194	SPKR	SPKR
196	FAN_PWMOUT	FAN_PWMOUT
198	GND	GND
200	SPI_CS0#	SPI_CS0#
202	SPI_CS1#	SPI_CS1#
204	MFG_NC4 (VGA_R Reserved)	VGA_R
206	VCC_5V_SB	VCC_5V_SB
208	MFG_NC2 (VGA_G Reserved)	VGA_G
210	MFG_NC3 (VGA_B Reserved)	VGA_B
212	VCC	VCC
214	VCC	VCC
216	VCC	VCC
218	VCC	VCC
220	VCC	VCC
222	VCC	VCC
224	VCC	VCC
226	VCC	VCC
228	VCC	VCC
230	VCC	VCC

Chapter 3
System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you set up onboard PCI device and handle Watch Dog Timer (WDT) and operation of GPIO in software programming.

3.1 Intel® Bay Trial-I CPU

Bay Trail E3815, 512K Cache, 1.46GHz
Bay Trail E3825, 1M Cache, 1.33GHz
Bay Trail E3827, 1M Cache, 1.75GHz
Bay Trail E3845, 2M Cache, 1.91GHz

Configuring System Bus

PQ7-M106IE/IL-E will automatically detect the CPU FSB 400/533MHz CMOS used. CPU speed of Intel ATOM Processor for Mobile can be detected automatically.

3.2 Main Memory

The main memory of the PQ7-M106IE/IL-E module supports maximum 4GB, 1067 MT/s (E3815, E3825) and maximum 8GB, 1333 MT/s (E3827, E3845) DDR3L-SDRAM (1.35V) as main memory, Non-ECC (Error Checking and Correcting). Please refer to table1 to know which memory size has been mounted on PQ7-M106IE module with different types CPU. Memory clock and related settings can be detected by BIOS via SPD interface.

Table1:

Model name	Memory Size on module
PQ7-M106IE/IL-E-E3815	2GB, 1067MT/s
PQ7-M106IE/IL-E-E3825	2GB, 1067 MT/s
PQ7-M106IE/IL-E-E3827	2GB, 1333 MT/s
PQ7-M106IE/IL-E-E3845	2GB or 4GB, 1333MT/s

3.3 Installing the Single Board Computer

To install your PQ7-M106IE/IL-E into standard chassis or proprietary environment, please perform the following:

Step 1 : Check all jumpers setting on proper position
Step 2 : Install and configure CPU and memory module on right position
Step 3 : Place PQ7-M106 into the dedicated position in the system
Step 4 : Attach cables to existing peripheral devices and secure it

WARNING
Please ensure that SBC is properly inserted and fixed by mechanism.

Note:
Please refer to section 3.3.1 to 3.3.6 to install INF/VGA/LAN/Audio/Sideband Fabric Device/Trusted Execution Engine drivers.

3.3.1 Chipset Component Driver

PQ7-M106IE/IL-E uses state-of-art Intel® BayTrail-I chipset. It's a new chipset that some old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 8, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in PQ7-M106IE CD-title

3.3.2 Intel® Gen7 Graphic Controller

PQ7-M106IE/IL-E has integrated Intel® Gen7 Graphic which supports DX11, OpenGL3.2. It is the most advanced design to gain an outstanding graphic performance. PQ7-M106IE/IL-E supports VGA (2560x1536@24bpp), eDP (2560x1600@ 24bpp), DP (1.1a) (2560x1600@24bpp). It also supports dual displays mode
(1) DP+ eDP or LVDS (Bridge IC is needed)
(2) HDMI+ eDP or LVDS (Bridge IC is needed)
(3) DVI+ eDP or LVDS (Bridge IC is needed)
This combination makes PQ7-M106IE/IL-E an excellent piece of multimedia hardware.

Drivers Support
Please find the Graphic driver in the PQ7-M106 CD-title. The driver supports Windows 8.

3.3.3 Intel I210IT Gigabit Ethernet Controller

Drivers Support

Please find Intel I210IT LAN driver in /Ethernet directory of PQ7-M106 CD-title. The driver supports Windows 8.

3.3.4 Intel HD Audio Controller

Please find Intel® High Definition Audio driver form PQ7-M106 CD-title. The driver supports Windows 8.

3.3.5 Intel Sideband Fabric Device

Please find Intel® Sideband Fabric Device driver form PQ7-M106 CD-title. The driver supports Windows 8.

3.3.6 Intel Trusted Execution Engine

Please find Intel® Trusted Execution Engine driver form PQ7-M106 CD-title. The driver supports Windows 8.

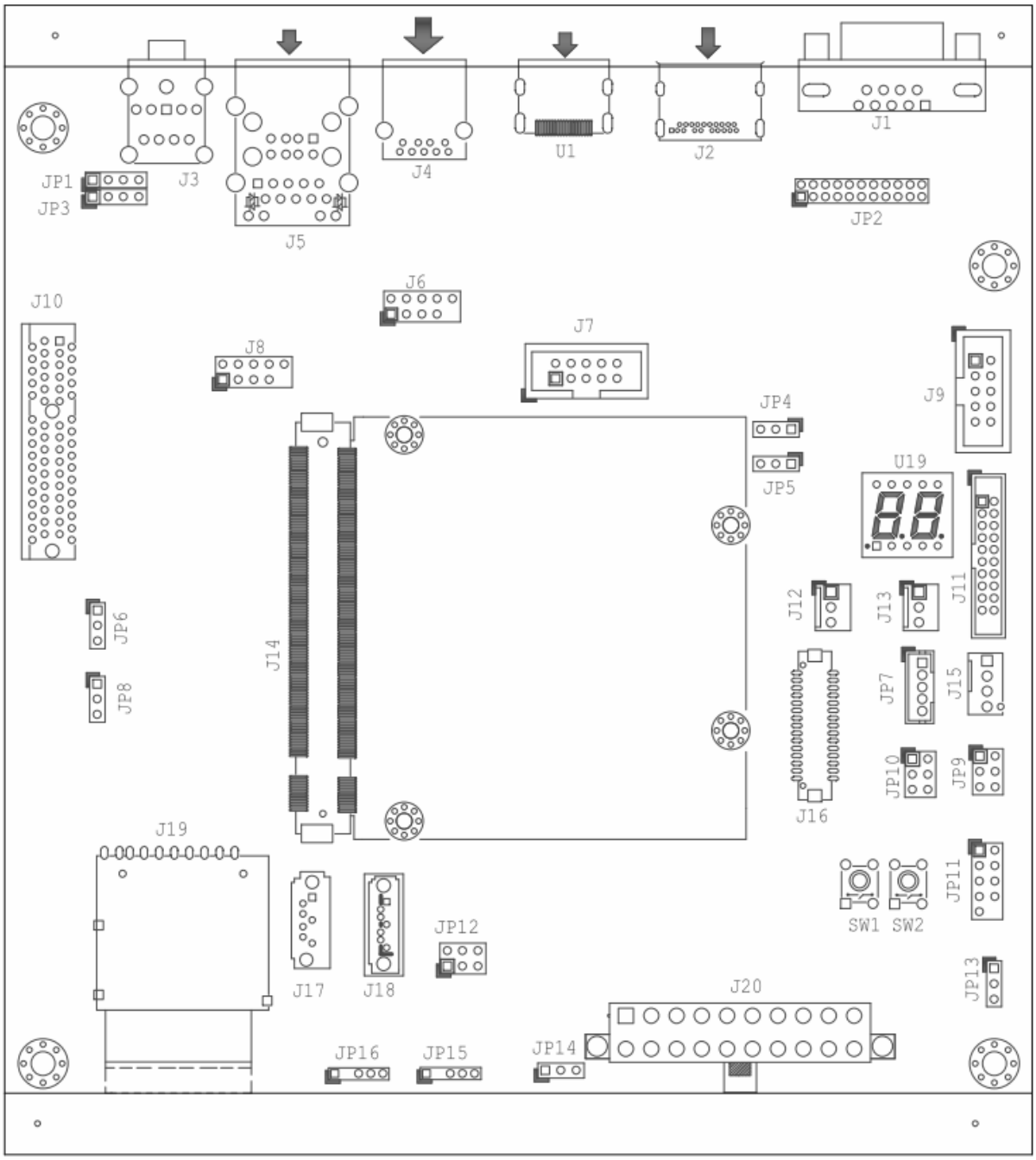
3.4 Clear CMOS Operation

The following table indicates how to enable/disable Clear CMOS Function hardware circuit by putting jumper of the PQ7-C201 carrier board.

Please cut the AC power off then set JP8 from **1-2 short (Default)** to **2-3 short (Clean CMOS)** after 5 seconds to set it back to 1-2 short then power on the board.

JP8：CMOS Setting

	Jumper Setting Describe
*1-2	Default
2-3	Clean CMOS



PQ7-C201 Jumper & Connector Location

Chapter 4
BIOS Setup Information

PQ7-M106IE/IL-E is equipped with the Phoenix BIOS stored in Flash ROM. These BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, PQ7-M106IE/IL-E communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start up.

4.1 Entering Setup -- Launch System Setup

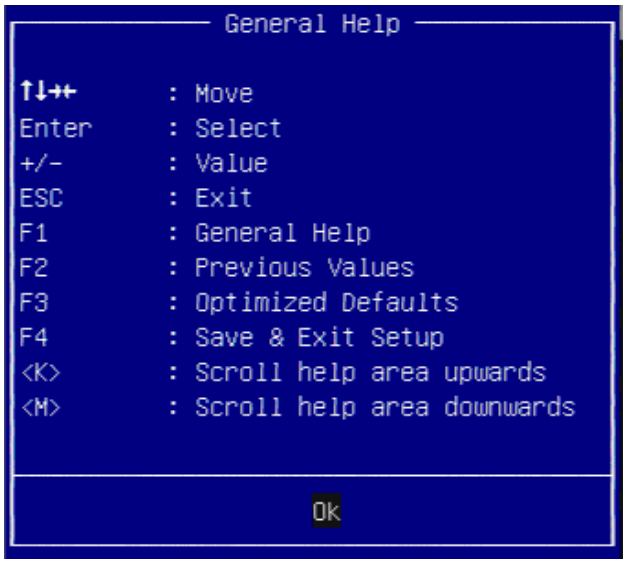
Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <Del> key will enter BIOS setup screen.

Press <Del> or <Esc> to enter SETUP

If the message disappears before responding and still wish to enter Setup, please restart the system by turning it OFF and On or pressing the RESET button. It can be also restarted by pressing <Ctrl>, <Alt>, and <Delete> keys on keyboard simultaneously.

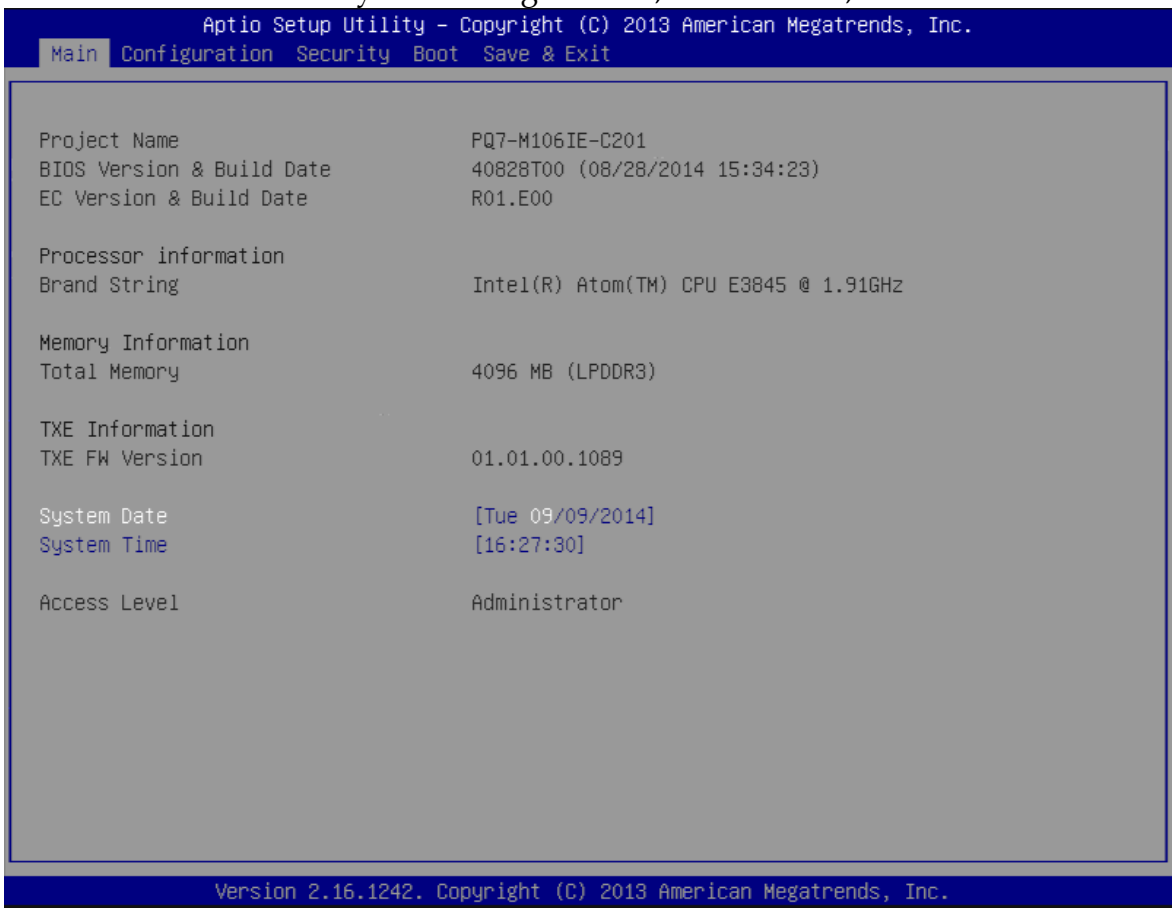
Press <F1> to Run General Help or Resume

The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing <F1>. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press <Esc> to exit the Help screen.



4.2 Main

Use this menu for basic system configurations, such as time, date etc.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Configuration Security Boot Save & Exit
Project Name PQ7-M106IE-C201
BIOS Version & Build Date 40828T00 (08/28/2014 15:34:23)
EC Version & Build Date R01.E00
Processor information
Brand String Intel(R) Atom(TM) CPU E3845 @ 1.91GHz
Memory Information
Total Memory 4096 MB (LPDDR3)
TXE Information
TXE FW Version 01.01.00.1089
System Date [Tue 09/09/2014]
System Time [16:27:30]
Access Level Administrator
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System Date

View or set system date

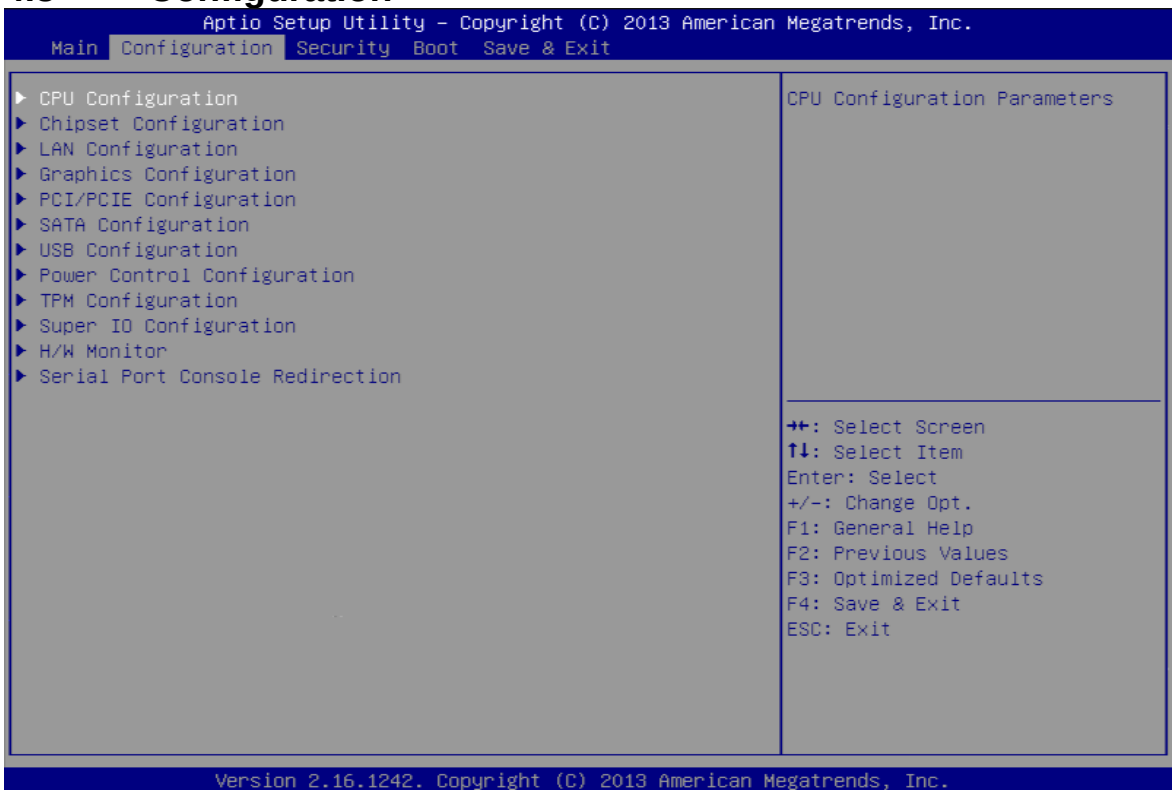
The date format is <Day>, <Month> <Date> <Year>. Use [+] or [−] to configure system Date.

System Time

View or set system time

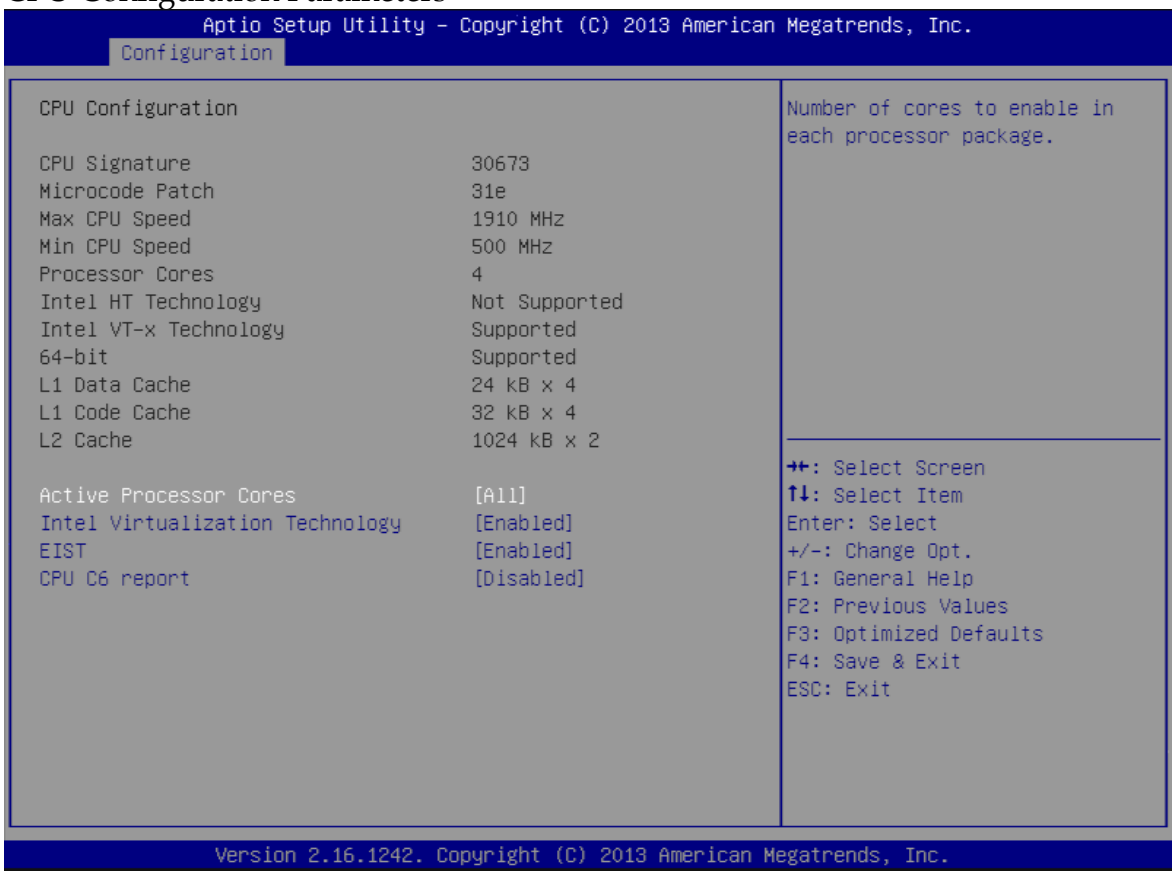
The time format is <Hour> <Minute> <Second>. Use [+] or [−] to configure system Time.

4.3 Configuration



CPU Configuration

CPU Configuration Parameters


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Configuration
CPU Configuration
CPU Signature 30673
Microcode Patch 31e
Max CPU Speed 1910 MHz
Min CPU Speed 500 MHz
Processor Cores 4
Intel HT Technology Not Supported
Intel VT-x Technology Supported
64-bit Supported
L1 Data Cache 24 kB x 4
L1 Code Cache 32 kB x 4
L2 Cache 1024 kB x 2
Active Processor Cores [All]
Intel Virtualization Technology [Enabled]
EIST [Enabled]
CPU C6 report [Disabled]
Number of cores to enable in each processor package.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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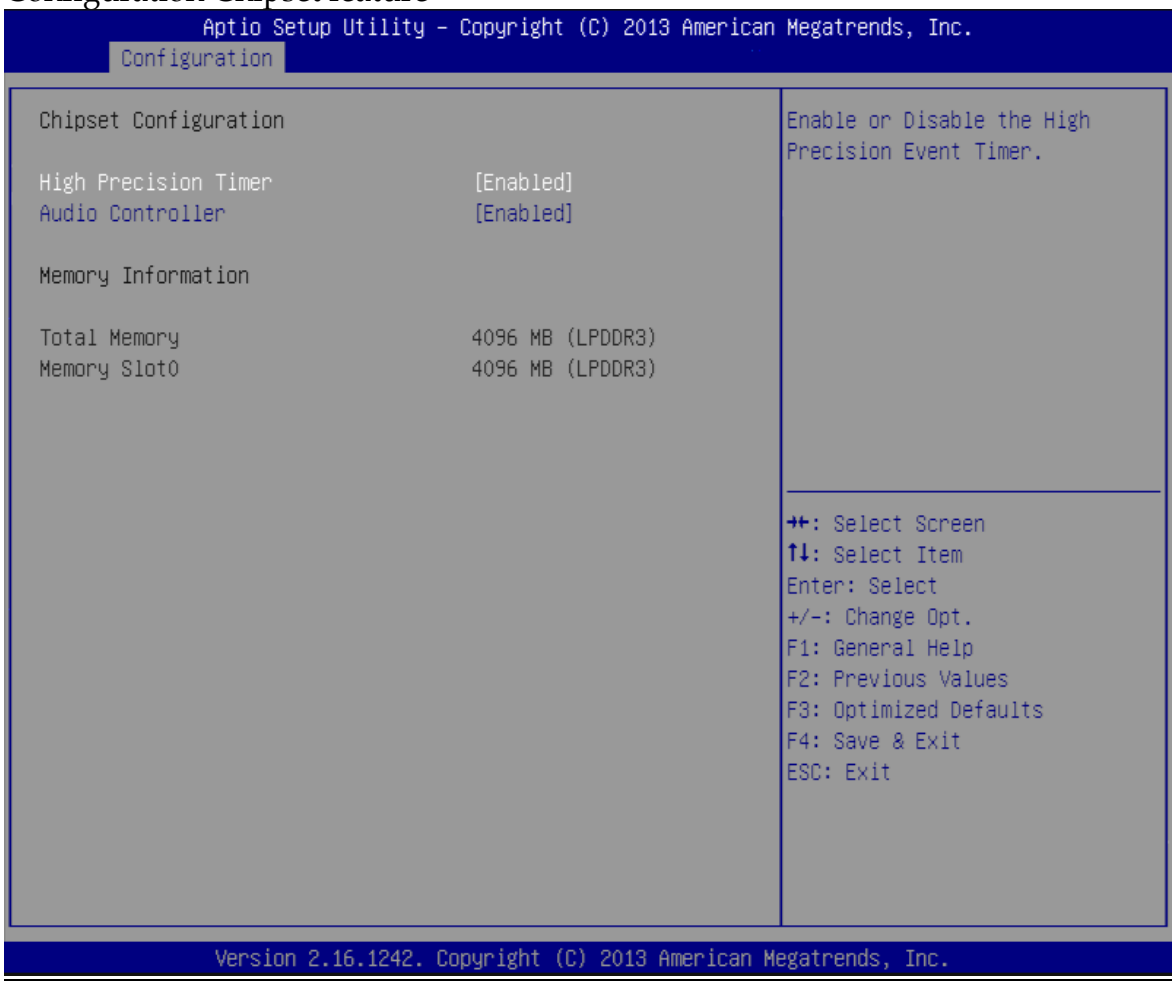
Active Processor Cores
Number of cores to enable in each processor package
Choices: All, 1

Intel Virtualization Technology
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology
Choices: Disabled, Enabled.

EIST
Enabled/Disabled Intel SpeedStep
Choices: Disabled, Enabled.

CPU C6 report
Enabled/Disabled CPU C6 (ACPI C3) report to OS
Choices: Disabled, Enabled.

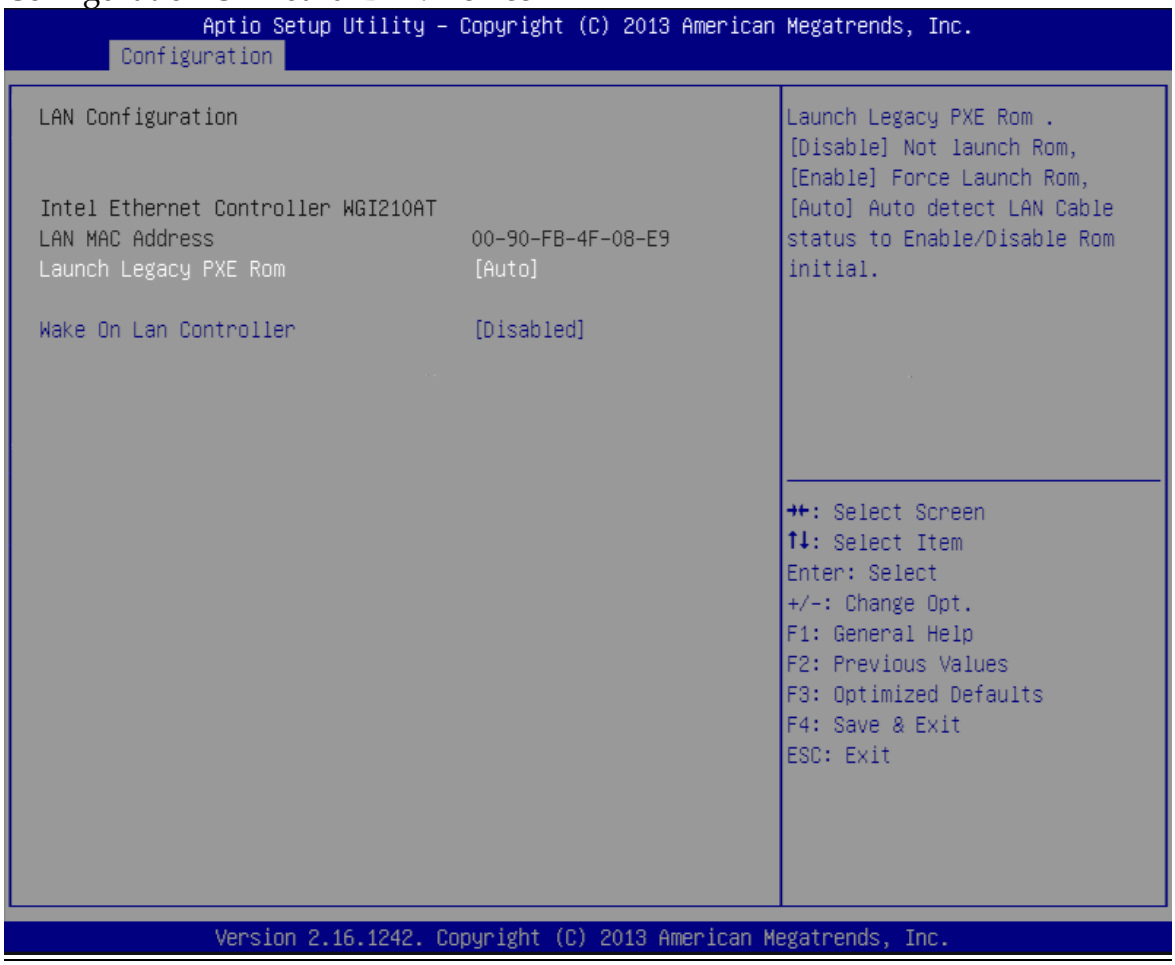
Chipset configuration
Configuration Chipset feature



High Precision Timer
Enable or Disable the High Precision Event Timer.
Choices: Enabled, Disabled.

Audio Controller
Control Detection of the Azalia device. Disabled = Azalia will be unconditionally Disabled. Enabled = Azalia will be unconditionally Enabled. Auto = Azalia will be Enabled if present. Disabled otherwise
Choices: Disabled, Enabled.

LAN Configuration
Configuration On Board LAN Device

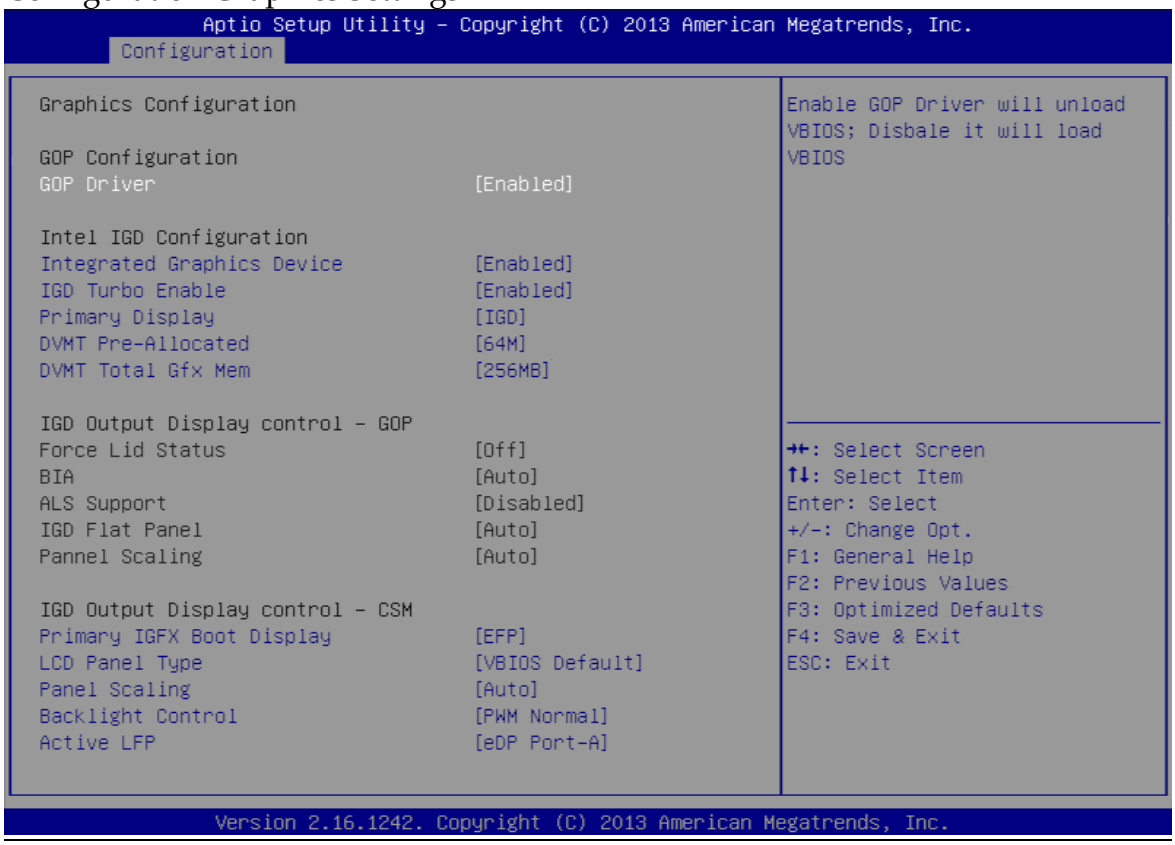


Launch Legacy PXE Rom
Launch Legacy PXE Rom. [Disabled] Not launch Rom, [Enabled] Force Launch Rom, [Auto] Auto detect LAN Cable status to Enabled/Disabled Rom initial.
Choices: Disable, Enable, Auto.

Wake On Lan Controller
Enabled/Disabled Intel Lan WGI210AT wakeup function.
Choices: Enabled, Disabled.

Graphics Configuration

Configuration Graphics Settings



GOP Driver

Enabled GOP Driver will unload VBIOS; Disabled it will load VBIOS
Choices: Enabled, Disabled.

Integrated Graphic Device

Enable: Enable Integrated Graphic Device (IGD) when selected as the Primary Video Adapter. Disable: Always disable IGD.
Choices: Enabled, Disabled.

IGD Turbo Enable

Enable: Enabled IGD Turbo Enabled. Disable: IGD Turbo Disabled.
Choices: Enabled, Disabled.

Primary Display

Select which of IGD/PCI Graphics device should be Primary Display.
Choices: Auto, IGD, PCI, SG.

DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory sized used by the Internal Graphic Device

Choices: 64M, 96M, 128M, 160M, 192M, 224M, 256M, 288M, 320M, 352M, 384M, 416M, 448M, 480M, 512M.

DVMT Total Gfx Mem
Select DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.
Choices: 128MB, 256MB, Max.

Primary IGFX Boot Display
Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your election. VGA modes will be supported only on primary display.
Choices: EFP, LFP.

LCD Panel Type
Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.
Choices: VBIOS Default, 640x480 LVDS, 800x600 LVDS, 1024x768 LVDS, 1280x1024 LVDS, 1400x1050 (RB) LVDS, 1400x1050 LVDS, 1600x1200 LVDS, 1366x768 LVDS, 1680x1050 LVDS, 1920x1200 LVDS, 1440x900 LVDS, 1600x900 LVDS, 1280x800 LVDS, 1920x1080 LVDS, 2048X1536 LVDS.

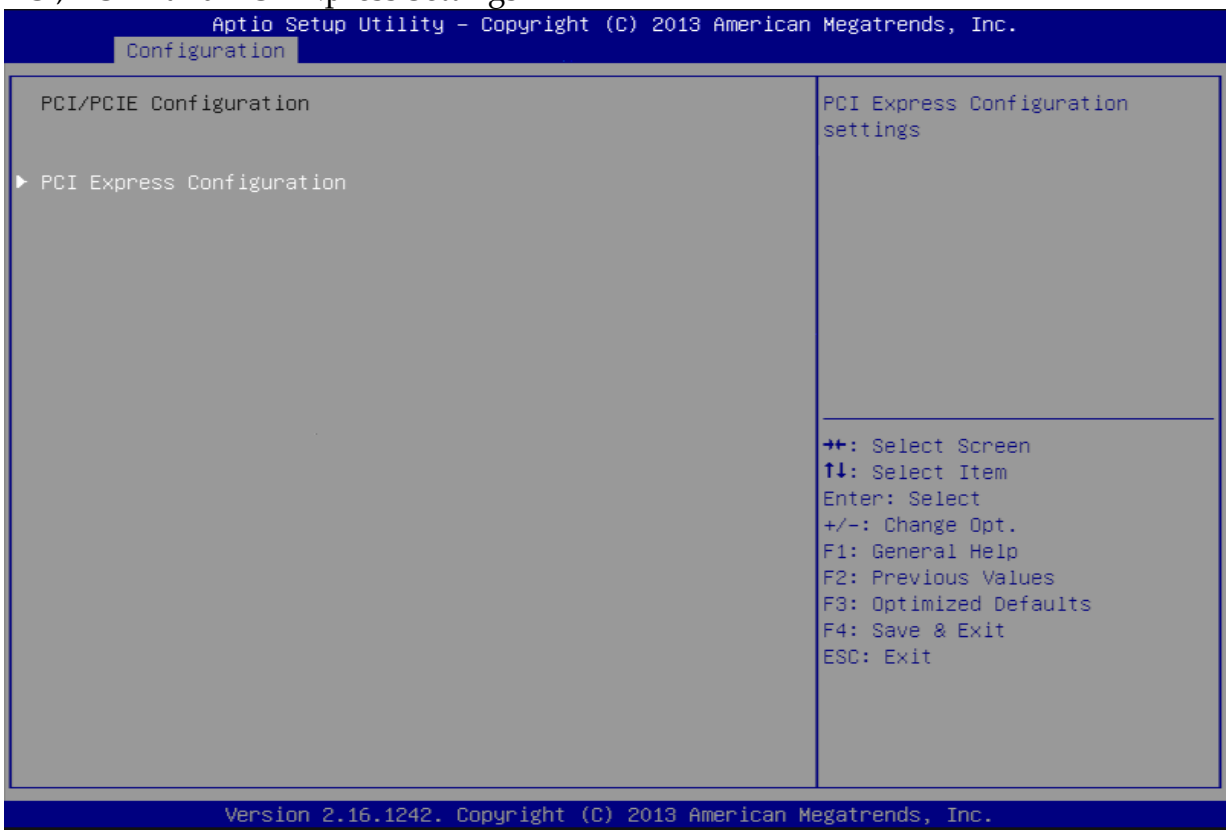
Panel Scaling
Select the LCD Panel scaling option used by Internal Graphic device
Choices: Auto, Off, Force Scaling.

Backlight Control
Back Light Control Setting
Choices: PWM Inverted, PWM Normal, GMBus Inverted, GMBus Normal.

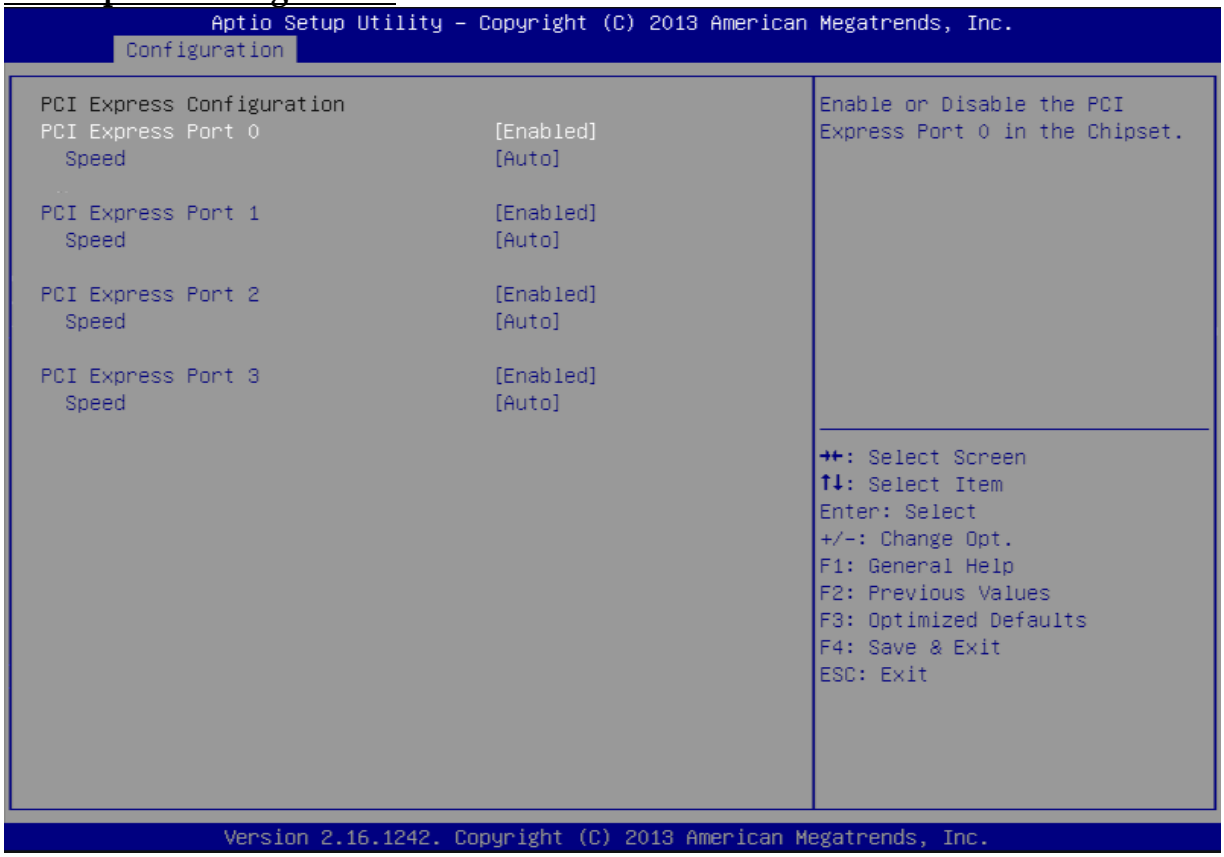
Active LFP
Select the Active LFP Configuration. NO LVDS: VBIOS does not enable LVDS
eDP Port A: LFP driven by Int-DisplayPort encoder from Port-A.
Choices: No LVDS, eDP Port-A.

PCI/PCIE Configuration

PCI, PCI-X and PCI Express Settings



PCI Express Configuration


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Configuration
PCI Express Configuration
PCI Express Port 0 [Enabled]
Speed [Auto]
PCI Express Port 1 [Enabled]
Speed [Auto]
PCI Express Port 2 [Enabled]
Speed [Auto]
PCI Express Port 3 [Enabled]
Speed [Auto]
Enable or Disable the PCI Express Port 0 in the Chipset.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

PCI Express Root Port 0-3
Enable or Disable the PCI Express Port 0-3 in the Chipset.
Choices: Enabled, Disabled.

Speed
Configure PCIe Port Speed.
Choices: Auto, Gen2, Gen1.

SATA configuration
SATA Device Configuration Settings

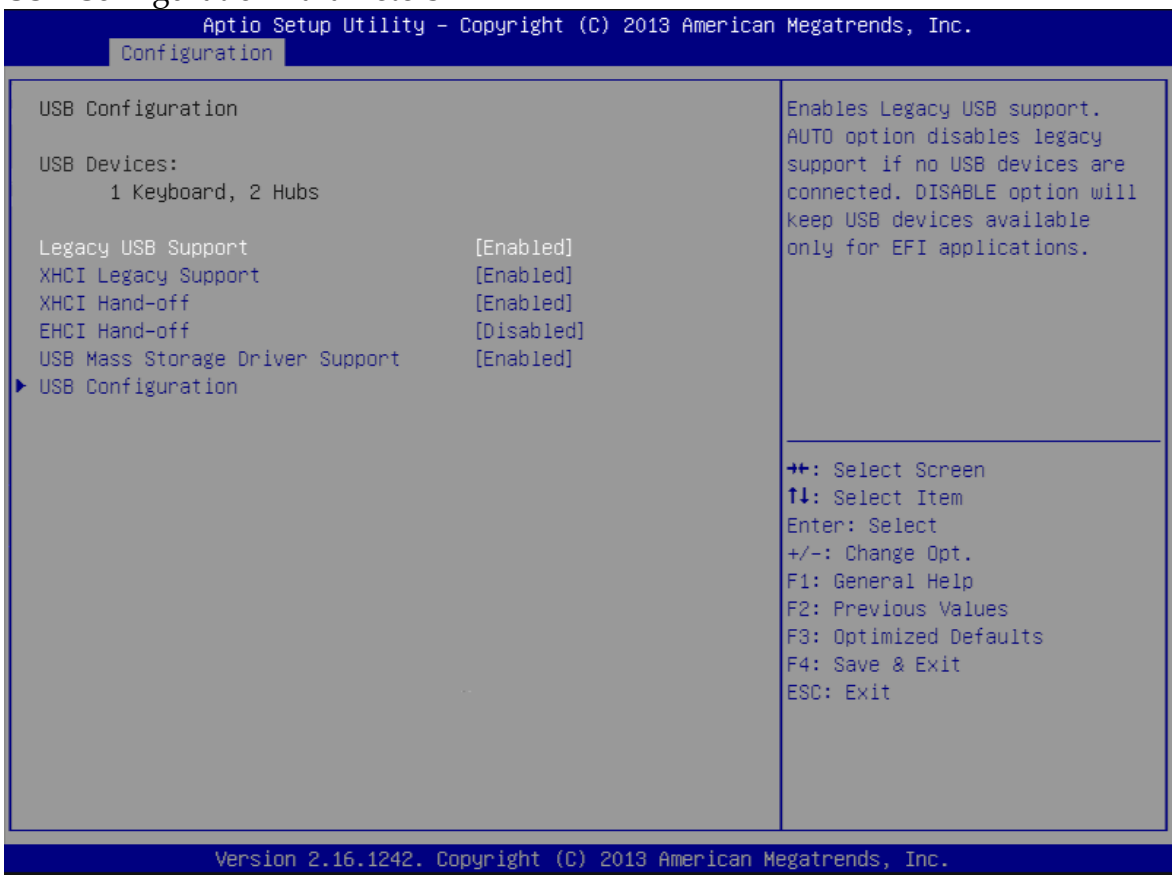
Serial-ATA (SATA)
Enable/Disable Serial ATA
Choices: Enabled, Disabled.

SATA Mode
Select IDE/AHCI
Choices: IDE Mode, AHCI Mode.

SATA-ATA Port 0-1
Enable/Disable Serial ATA Port 0-1
Choices: Enabled, Disabled.

SATA Port 0-1 Hot Plug
Enable/Disable Serial ATA Port 0-1 HotPlug
Choices: Enabled, Disabled.

USB Configuration
USB Configuration Parameters


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Configuration
USB Configuration
USB Devices:
1 Keyboard, 2 Hubs
Legacy USB Support [Enabled]
XHCI Legacy Support [Enabled]
XHCI Hand-off [Enabled]
EHCI Hand-off [Disabled]
USB Mass Storage Driver Support [Enabled]
USB Configuration
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Legacy USB Support
Enable Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
Choices: Enabled, Disabled, Auto.

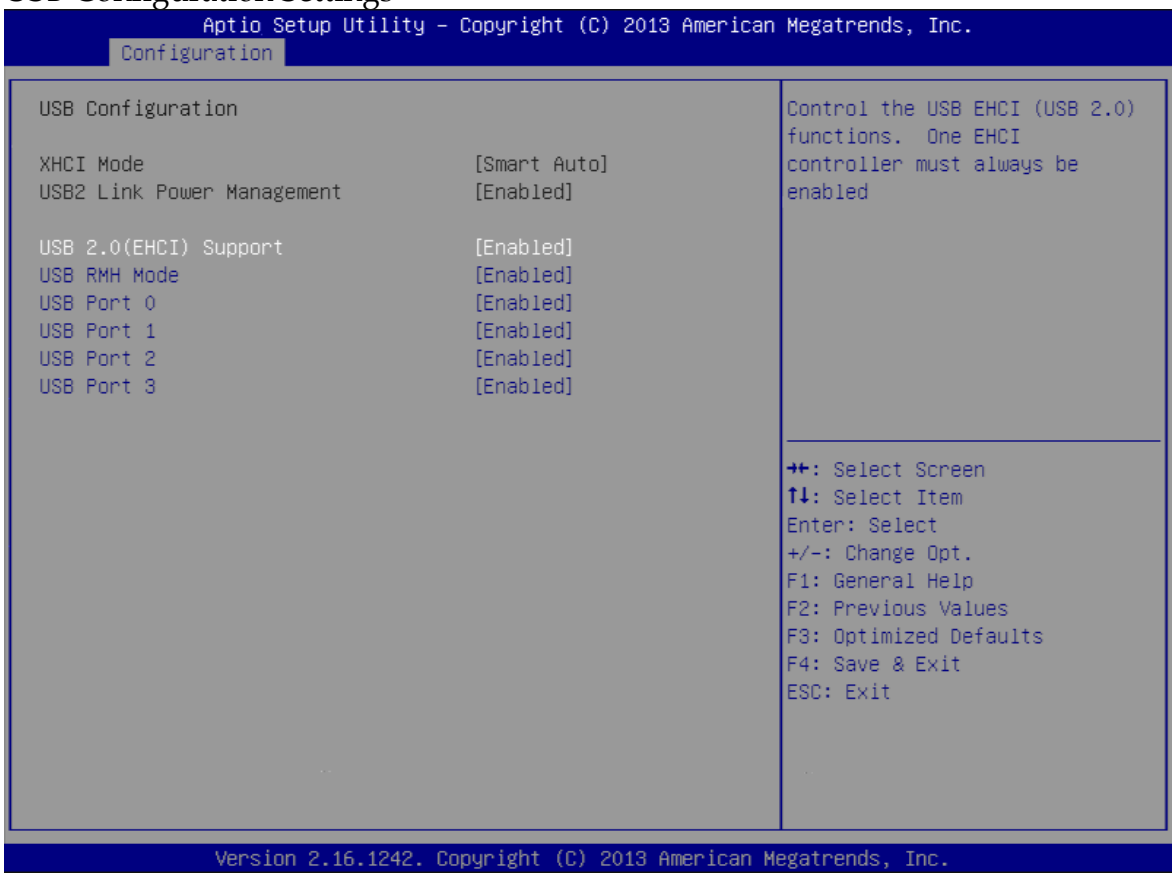
XHCI Legacy Support
Enable/Disable XHCI Controller Legacy Support.
Choices: Enabled, Disabled.

XHCI Hand-off
This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
Choices: Enabled, Disabled.

EHCI Hand-off
This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
Choices: Disabled, Enabled.

USB Mass Storage Driver Support
Enable/Disable USB Mass Storage Driver Support
Choices: Disabled, Enabled.

USB Configuration
USB Configuration Settings


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Configuration
USB Configuration
XHCI Mode [Smart Auto]
USB2 Link Power Management [Enabled]
USB 2.0(EHCI) Support [Enabled]
USB RMH Mode [Enabled]
USB Port 0 [Enabled]
USB Port 1 [Enabled]
USB Port 2 [Enabled]
USB Port 3 [Enabled]
Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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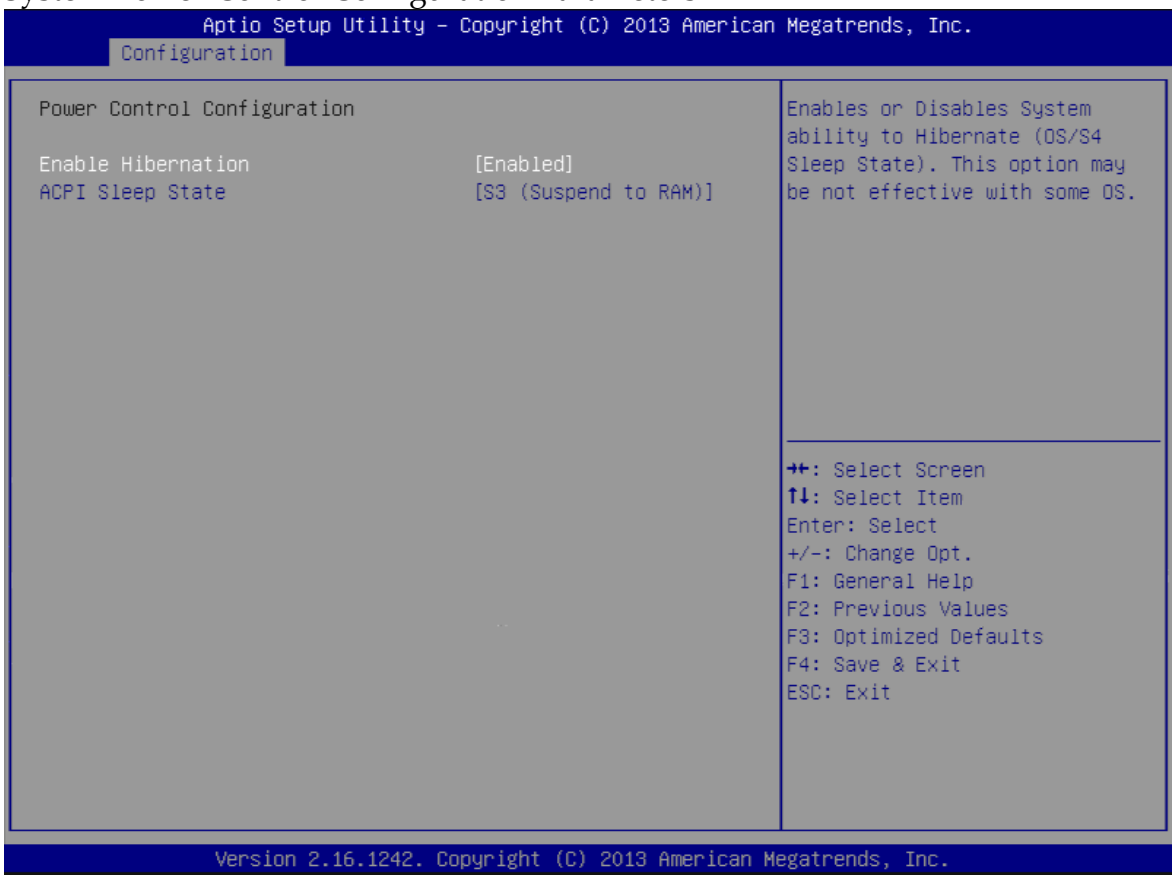
USB 2.0 (EHCI) Support
Control the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled.
Choices: Enabled, Disabled.

USB RMH Mode
Enable/Disable PCH USB Rate Matching Hubs mode
Choices: Enabled, Disabled.

USB Port #0~#3
Enable/Disable USB port0-3
Choices: Enabled, Disabled.

Power Control Configuration

System Power Control Configuration Parameters


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Configuration
Power Control Configuration
Enable Hibernation [Enabled]
ACPI Sleep State [S3 (Suspend to RAM)]
Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

Enabled Hibernation

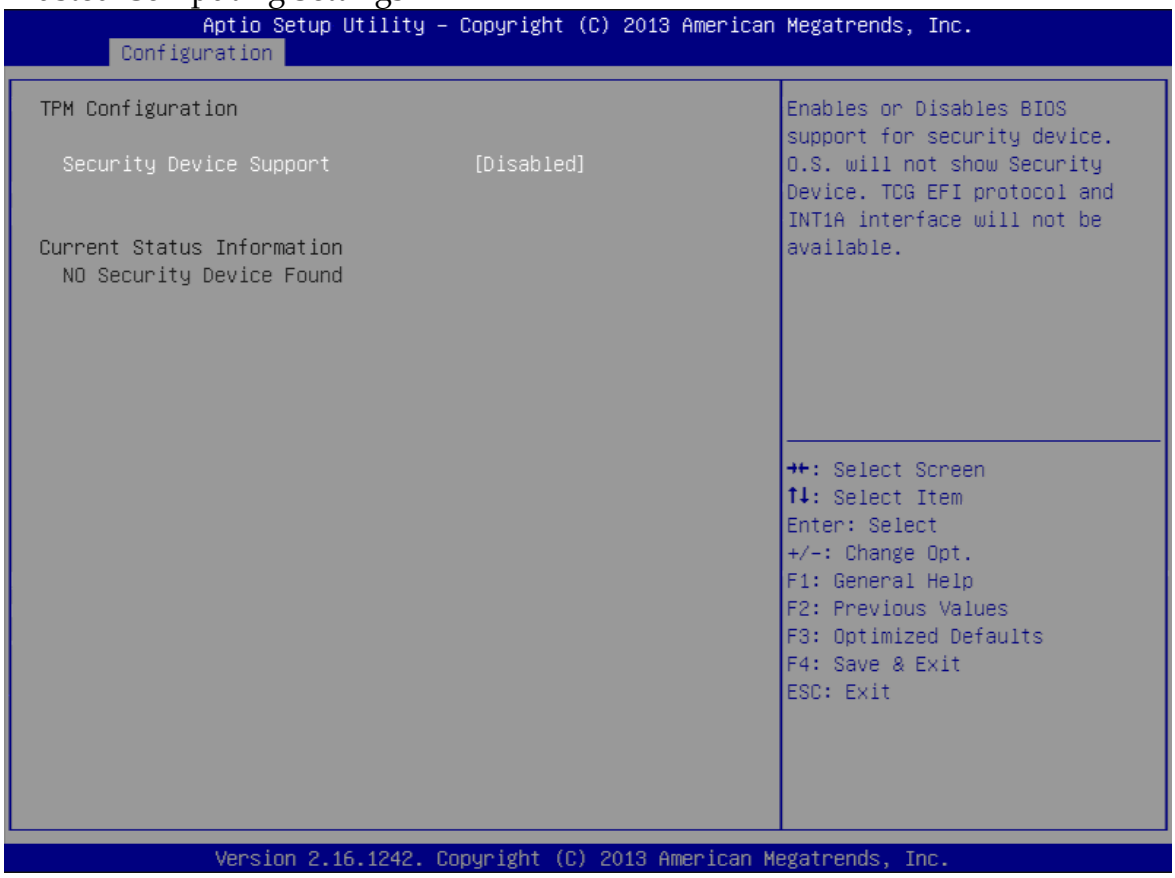
Enables or Disables system ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
Choices: Disabled, Enabled.

ACPI Sleep state

Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
Choices: Suspend Disabled, S3 (Suspend to RAM).

TPM

Trusted Computing Settings

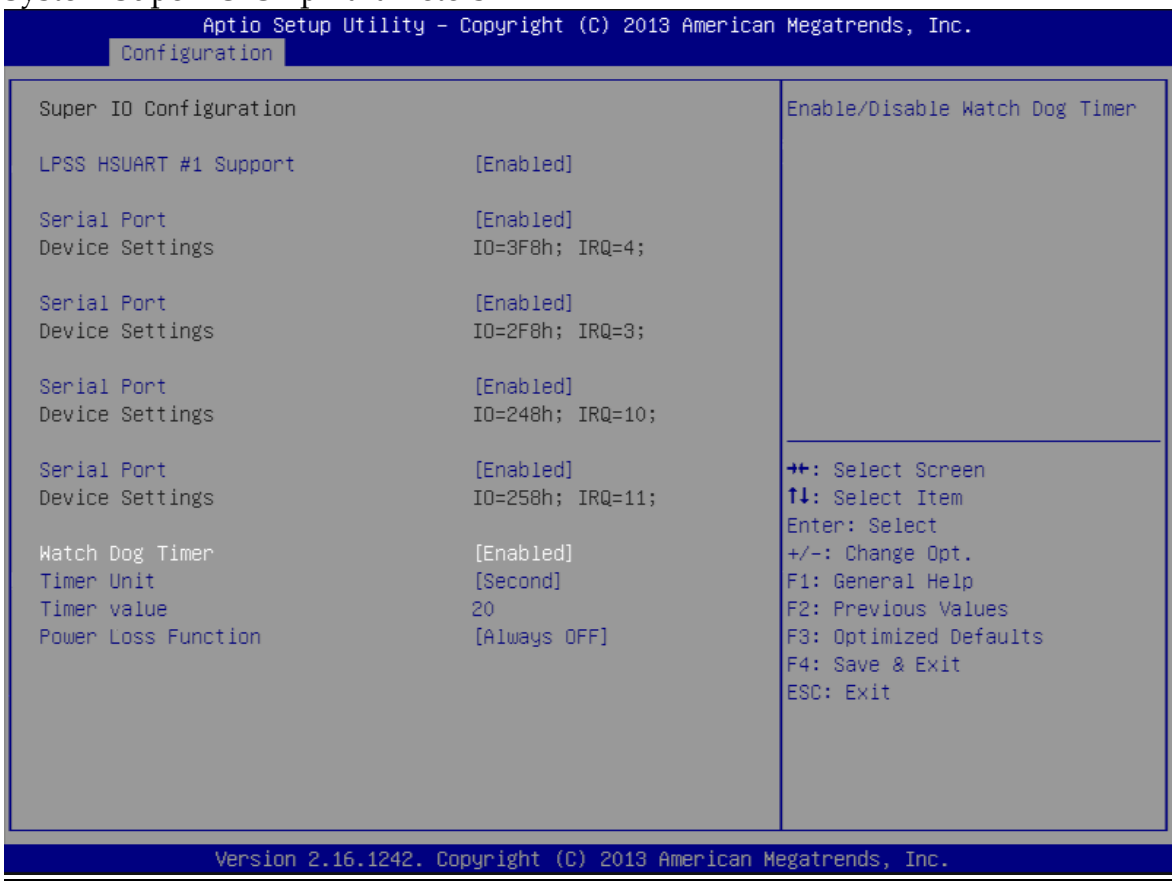

Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Configuration
TPM Configuration
Security Device Support [Disabled]
Current Status Information
NO Security Device Found
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

Security Device Support

Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
Choices: Disabled, Enabled.

Super I/O

System Super IO Chip Parameters



LPSS HSUART#1 Support

LPSS HSUART #1 Support Enable/Disable
Choices: Enabled, Disabled.

Serial Port

Enable or Disable serial port (COM).
IO=3F8H; IRQ=4;
IO=2F8h; IRQ=3;
IO=248h; IRQ=10;
IO=258h; IRQ=11;
Choices: Disabled, Enabled.

Watch Dog Timer

Enabled or Disabled watch dog timer
Choices: Disabled, Enabled.

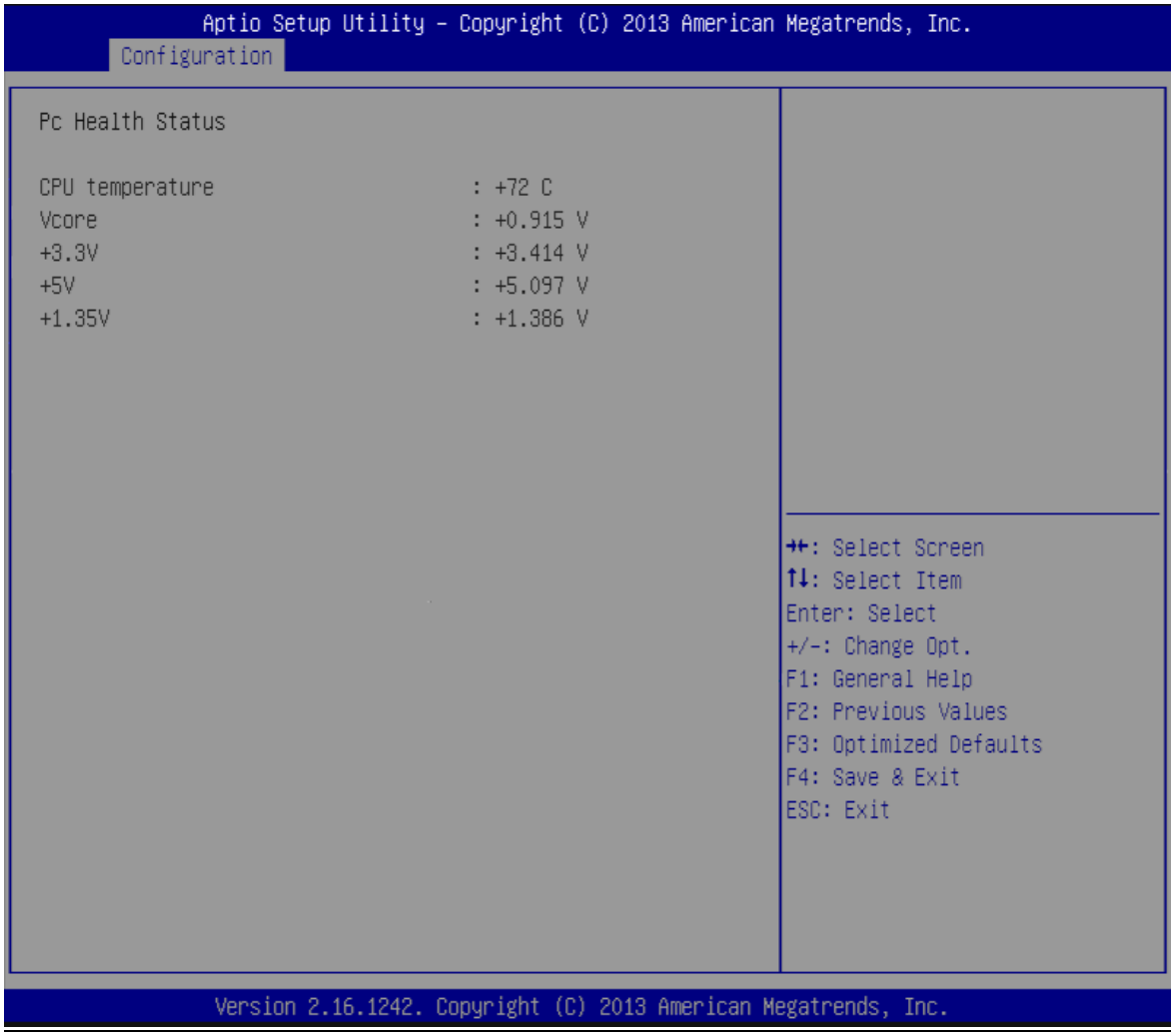
Timer Unit

Select Time counter unit for WDT
Choices: Second, Minute.

Timer Value
Set WDT Timer value seconds/minutes
Choices: 0-255

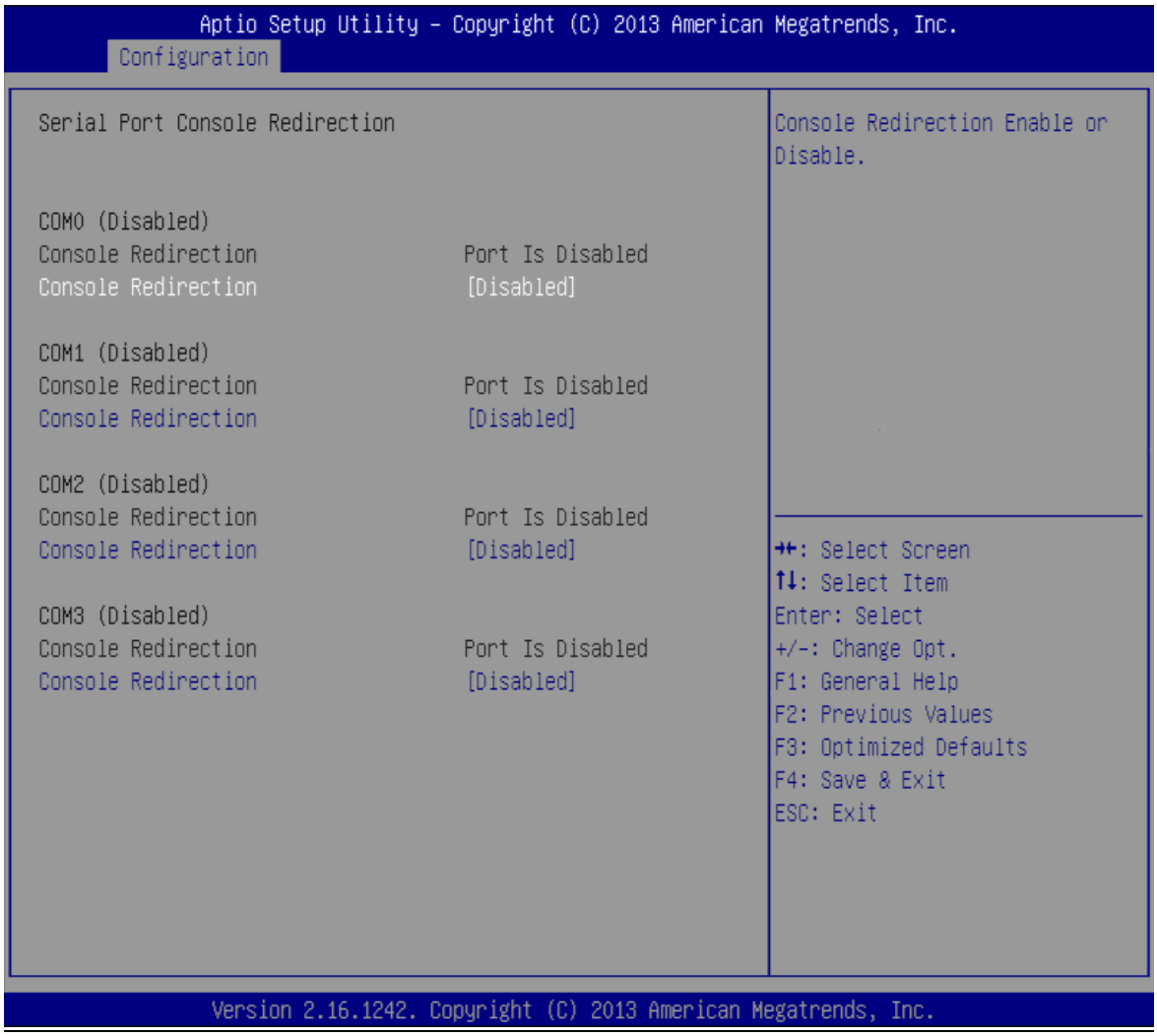
Power Loss function
Control SIO Power Loss Function, ON is always ON, OFF is always OFF, Last state will depends on last power state.
Choices: Always OFF, Always ON, Last State

H/W Monitor
Monitor hardware status



Serial Port Console Redirection

Serial Port Console Redirection



COM 0-3 (Disabled)

Console Redirection

Console Redirection Enable or Disable.

Choices: Disabled, Enabled.

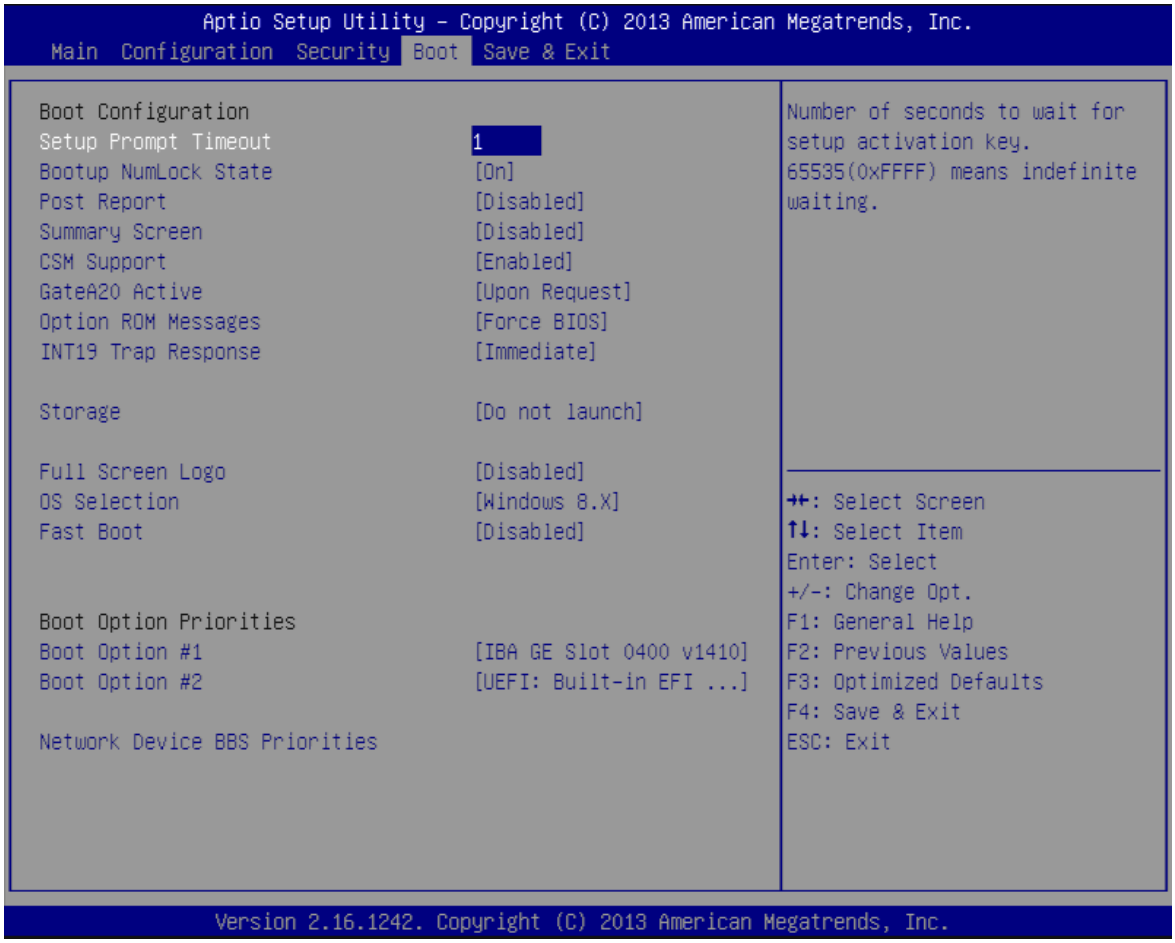
4.4 Security

Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Configuration Security Boot Save & Exit
Password Description
If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup. In Setup the User will
have Administrator rights.
The password length must be
in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

Administrator Password
Set Administrator Password

User Password
Set User Password

4.5 Boot


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Configuration Security Boot Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Post Report [Disabled]
Summary Screen [Disabled]
CSM Support [Enabled]
GateA20 Active [Upon Request]
Option ROM Messages [Force BIOS]
INT19 Trap Response [Immediate]
Storage [Do not launch]
Full Screen Logo [Disabled]
OS Selection [Windows 8.X]
Fast Boot [Disabled]
Boot Option Priorities
Boot Option #1 [IBA GE Slot 0400 v1410]
Boot Option #2 [UEFI: Built-in EFI ...]
Network Device BBS Priorities
Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Setup Prompt Timeout
Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Choices: 1-65535

Bootup NumLock State
Select the keyboard Numlock state
Choices: On, off.

Post Report
Post report support Enabled/Disabled
Choices: Disabled, Enabled.

Summary Screen
Summary Screen Support Enabled/Disabled
Choices: Disabled, Enabled.

CSM Support
Enable/Disable CSM support
Choices: Disabled, Enabled.

GateA20 Active
UPON REQUEST- GA20 can be disabled using BIOS Services.
Always- do no allow disabling GA20; this option is useful when any RT code is execduted above 1MB.
Choices: Upon Request, Always.

Option ROM Messages
Set display mode for Option ROM
Choices: Force BIOS, Keep Current.

INI19 Trap Response
BIOS reaction on INT19 trapping by option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.
Choices: Immediate, Postponed.

Storage
Controls the execution of UEFI and Legacy Storage OpROM
Choices: Do not launch, UEFI only, Legacy only.

Fill Screen Logo
Enables or Disables quiet boot option and Full screen logo
Choices: Disabled, Enabled.

OS Selection
OS Selection
Choices: Windows 8.X, windows 7.

Fast Boot
Enables or Disables boot with initialization of a minimal set of devices required to launch active for BBS boot options.
Choices: Disabled, Enabled.

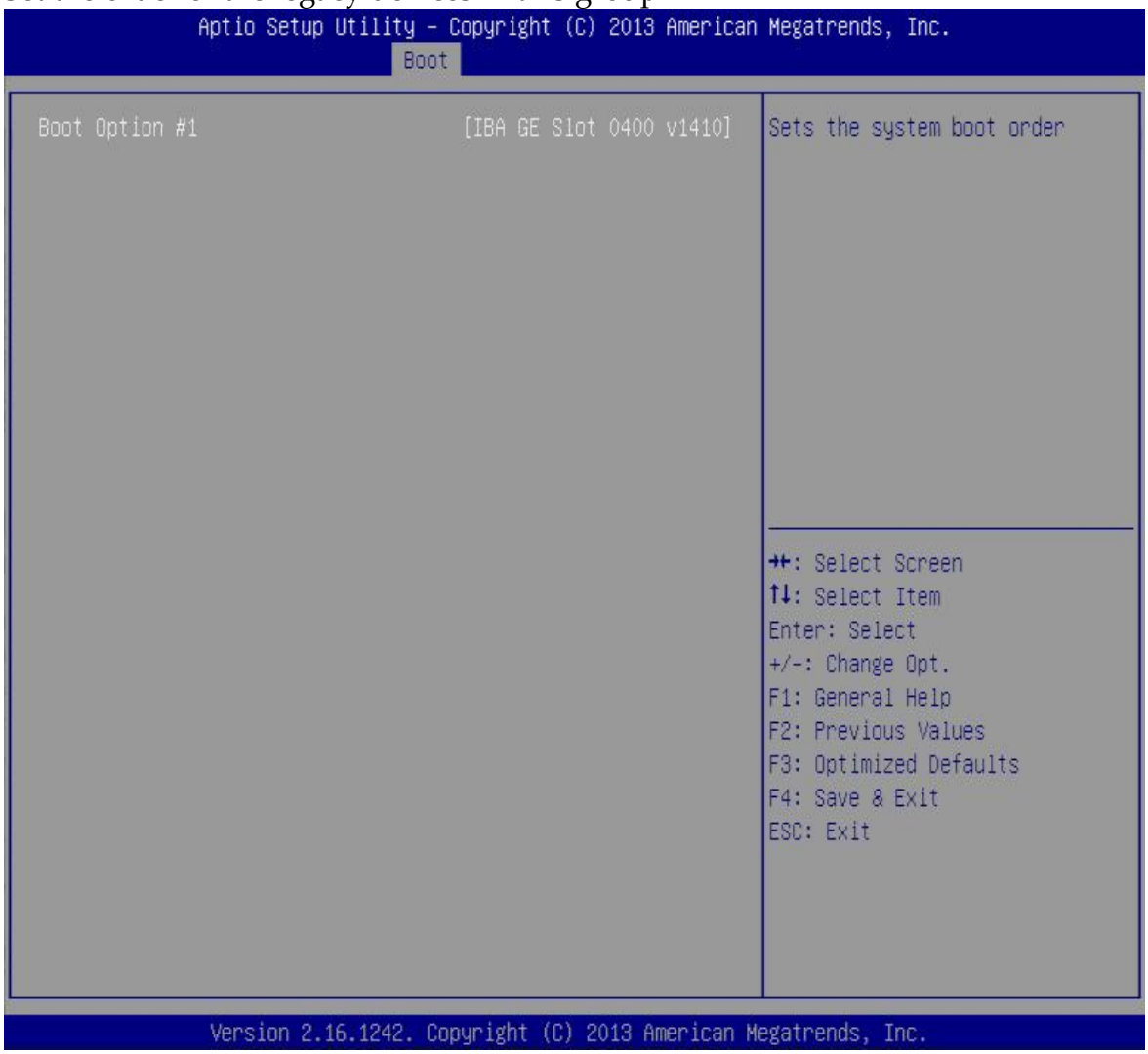
Boot Option #1-#2
Sets the system boot order
Choices: IBA GE Slot 0400 v1410, UEFI: Built-in EFI Shell, Disabled.

Network Device BBS Priorities
Set the order of the legacy devices in this group

Boot Option #1
Sets the system boot order
Choices: MMC-M8G1GC, Disabled.

Network Device BBS Priorities

Set the order of the legacy devices in this group

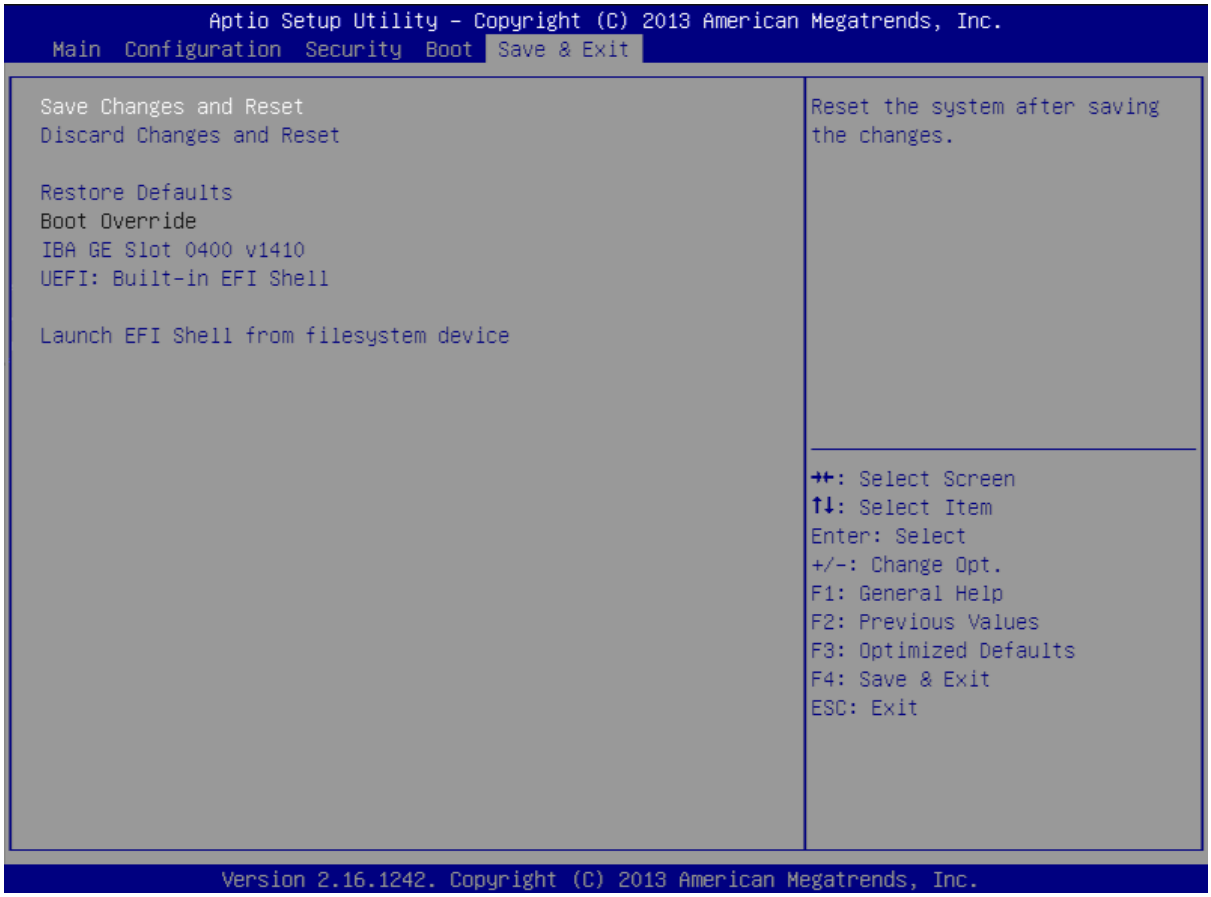


Boot Option #1

Sets the system boot order

Choices: IBA GE Slot 0400 v1410, Disabled.

4.6 Save & Exit


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Configuration Security Boot Save & Exit
Save Changes and Reset
Discard Changes and Reset
Restore Defaults
Boot Override
IBA GE Slot 0400 v1410
UEFI: Built-in EFI Shell
Launch EFI Shell from filesystem device
Reset the system after saving the changes.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

Save Changes and Reset
Reset the system after saving the changes
Choices: Yes, No.

Discard Changes and Reset
Reset system setup without saving any changes
Choices: Yes, No.

Restore Defaults
Restore/Load Default values for all the setup options
Choices: Yes, No.

IBA GE Slot 0400 v0410
Choices: Yes, No.

UEFI: Built-in EFI Shell
Choices: Yes, No.

Launch EFI Shell from filesystem device
Arrempts to Launch EFI Shell application (Shell.efi) from one one of the available filesystem devices

Boot into the initial shell environment, it can debug and dump the PCI Resource or jump to next bootable device. If it doesn't have boot device, it will return to BIOS setup menu. If you want to know the shell command, you can visit the Intel official hyperlink as below.

http://software.intel.com/en-us/articles/uefi-shell/#Internal_EFI_Shell_Commands

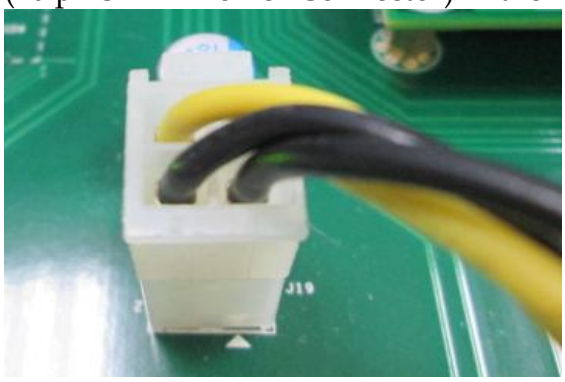
Chapter 5
Troubleshooting

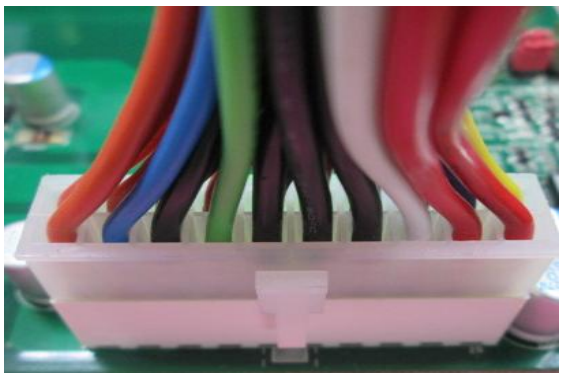
This chapter provides a few useful tips to quickly get PQ7-M106IE/IL-E running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 Hardware Quick Installation

ATX Power Setting

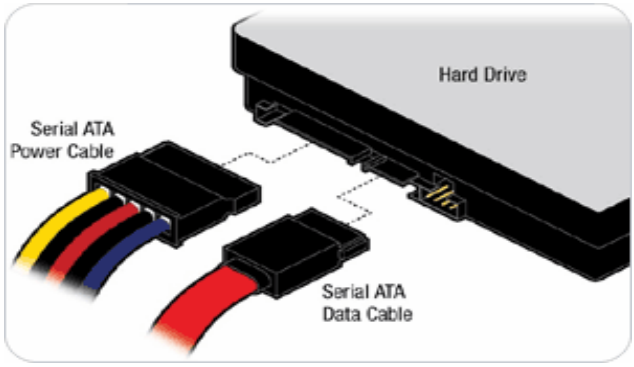
Unlike other Single board computer, PQ7-M106IE/IL-E supports ATX only. Therefore, there is no other setting that really needs to be set up. However, there are only two connectors that must be connected—J19 (4 pins ATX power connector) & J31 (20 pins ATX Power Connector) in the PCOM-CA00 carrier board.





Serial ATA

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time; The installation of Serial ATA is simpler and easier than IDE, because SATA hard disk doesn't require setting up Master and Slave, which can reduce mistake of hardware installation.



The PQ7-M106IE can support single SATA interface **(J30, SATAII, 3.0Gb/s)** with PQ7-C201 carrier board.

It has two SATA configurations to select in BIOS **(IDE, AHCI).**

5.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on ATX power, detected keyboard, mouse, SATA hard disk, DVI-D or HDMI or LVDS cable, power cable of the device, ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with PCOM-M106IE/IL-E, it is recommended, when going with the boot-up sequence, to hit "Del" or "Esc" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the BIOS setup menu, please switch to the **"Save & Exit"** page then select "**Restore Defaults"**, press **"Enter"** and select **"Yes"** to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

5.3 FAQ

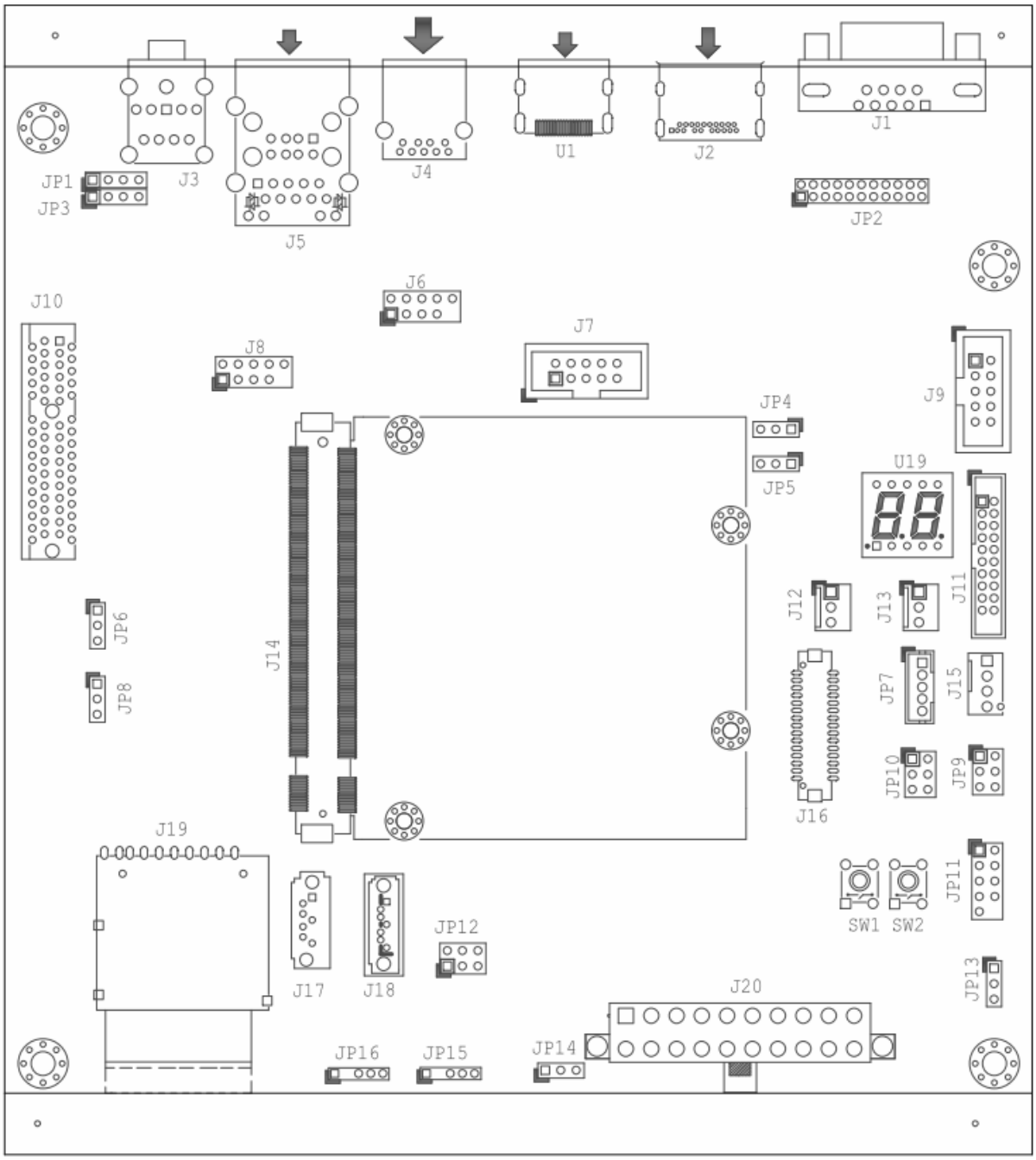
Information & Support

Question: I forget my password of system BIOS, what am I supposed to do?

Answer: You can switch off your power supply then find the **JP8** of the PQ7-C201 carrier board to set it from 1-2 short to 2-3 short and wait 5 seconds to clean your password then set it back to 1-2 short to switch on your power supply.

JP8：CMOS Setting

	Jumper Setting Describe
*1-2	Default
2-3	Clean CMOS



PQ7-C201 Jumper & Connector Location

Question: How to update the BIOS file of the PQ7-M106IE/IL-E?

Answer:1. Please visit our **Portwell Download Center** as below hyperlink:
http://www.portwell.com.tw/support/download_center.php
But you must register an account first. **(The E-Mail box should be an existing Company email address that you check regularly)**
http://www.portwell.com.tw/member/newmember.php

2. Input your User name and password to log in the download center.

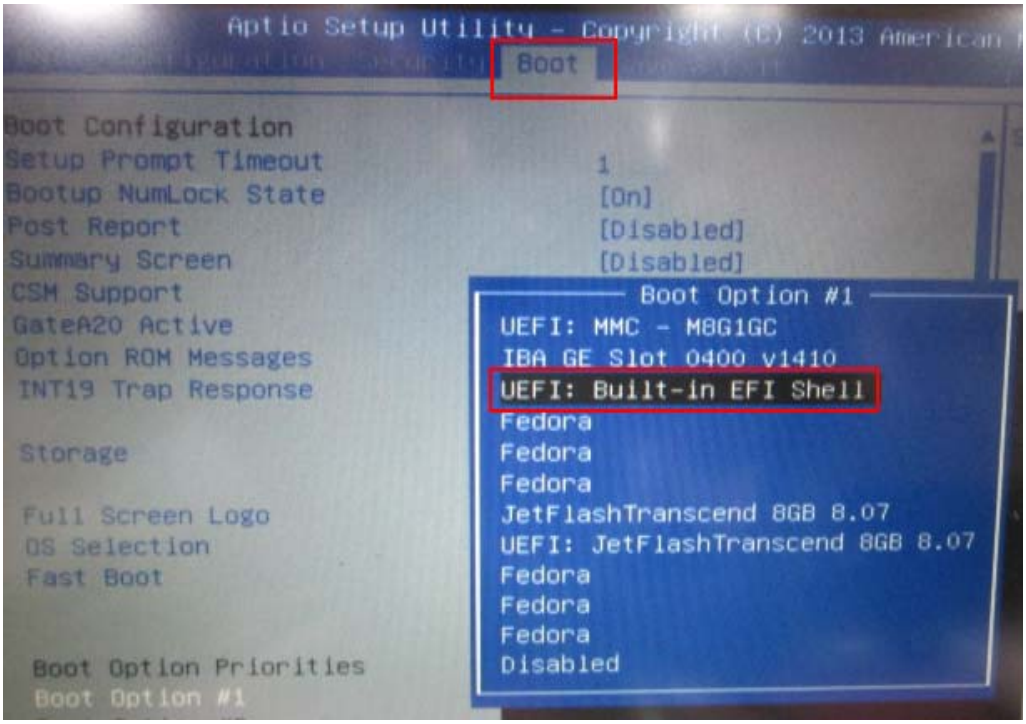
3. Select the "**Search download**" to input the keyword "**PQ7-M106IE/IL-E**".

4. Find the "**BIOS** "page to download the ROM file and flash utility.

5. Execute the zip file to root of the bootable USB pen drive. You can get the"**Readme.txt**", "Update.efi" two files.

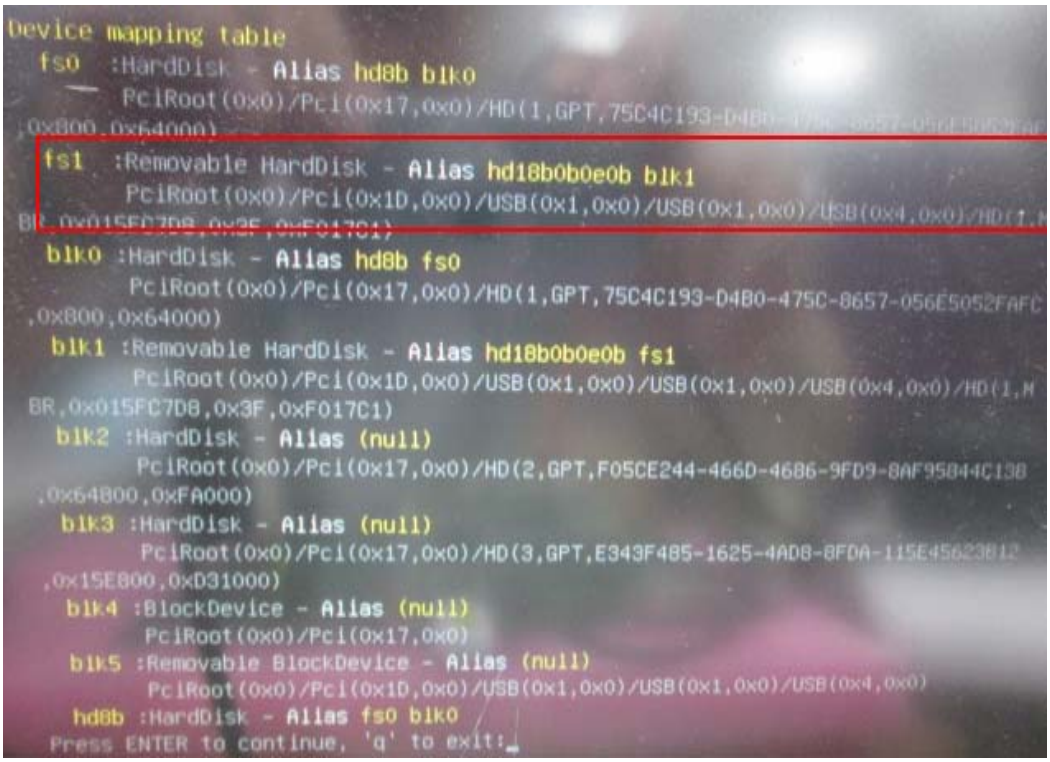
6. Insert your USB pen drive in USB port of the PQ7-C201 carrier board and power-on.

7. Please press the "**Del**" or "**Esc**" key to BIOS setup menu and switch to the "Boot" page to select the "**Boot Option #1**" to "**UEFI: Built-in EFI Shell**" then switch to "**Save & Exit**" page to select "**Save Changes and Reset**" option.

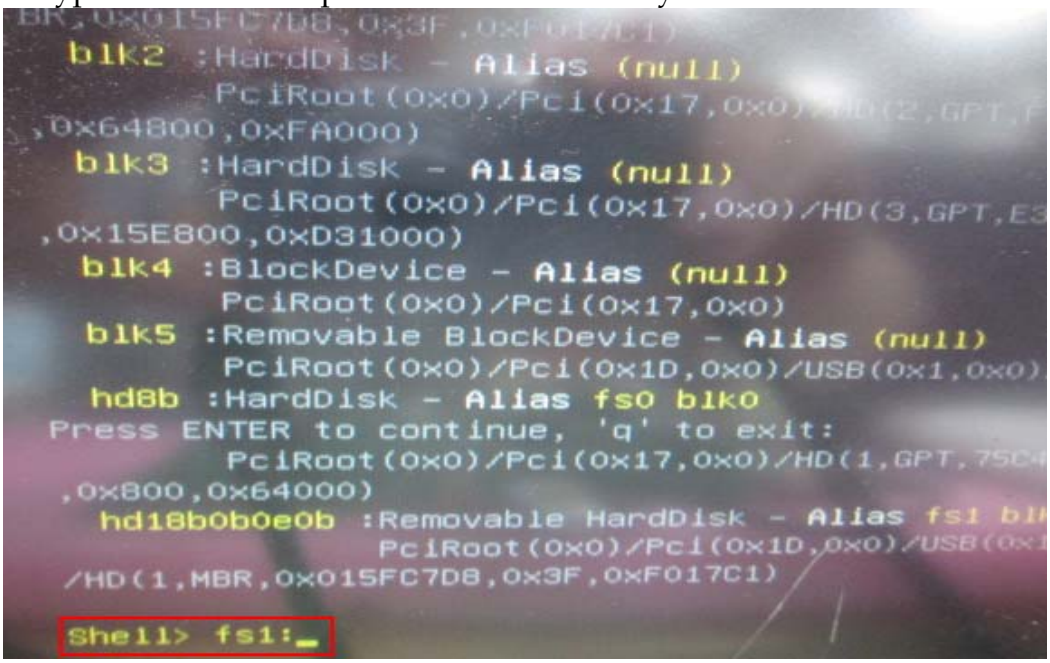


8. Boot to EFI-Shell then type the "**map –r –b**" command to find your USB hard disk device name.

Example: The device name of the USB hard disk is "fs1" than press the "Enter" to continue

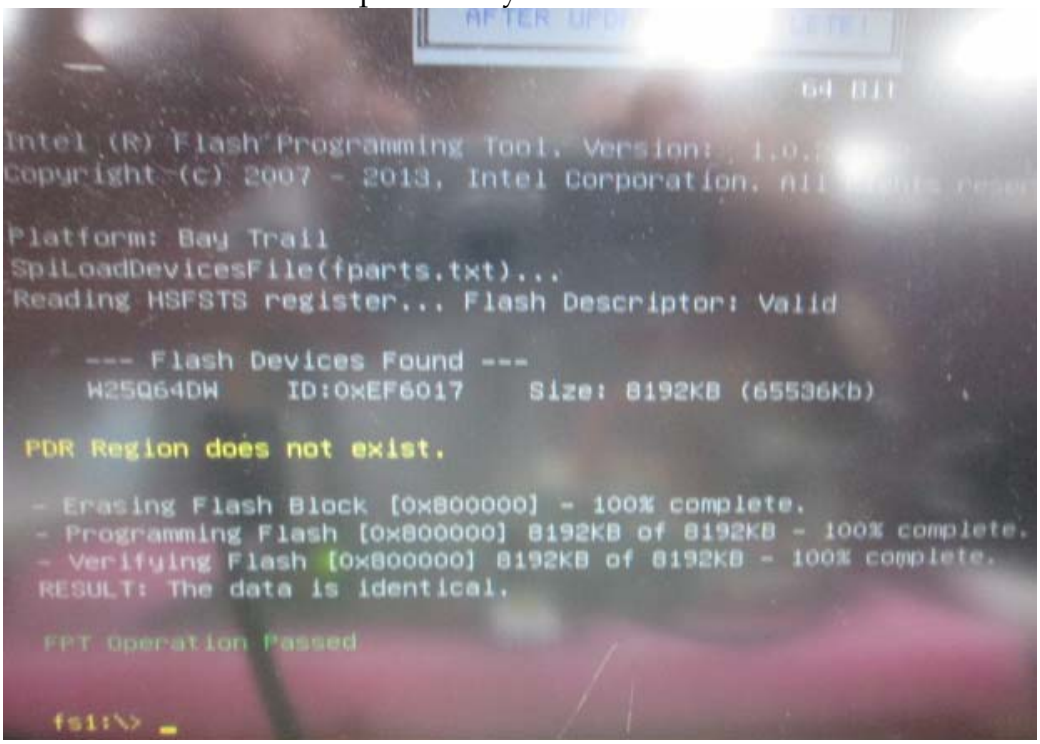


9. Type the "**fs1**:" and press "**Enter**" to switch your USB hard disk folder.



10. Type the" **update**" command to start flash BIOS processes.

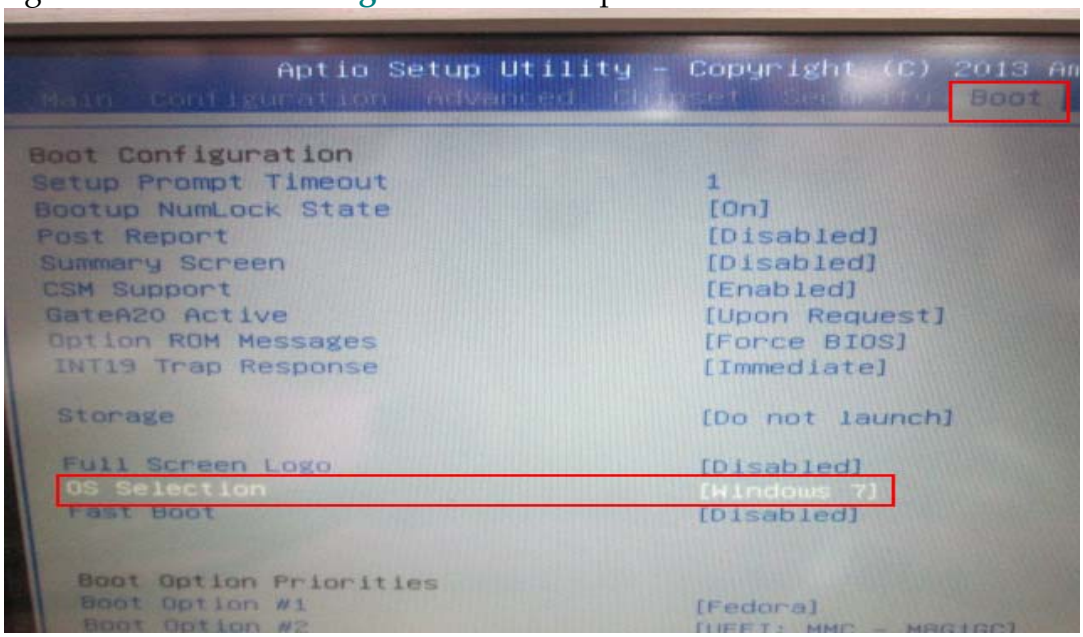
11. When it finished all update processes, you must **cut the AC power off** and **wait 5 seconds** then power on your board.


Intel (R) Flash Programming Tool. Version:
Copyright (c) 2007 - 2013, Intel Corporation.
Platform: Bay Trail
SpiLoadDevicesFile(fparts.txt)...
Reading HSFSTS register... Flash Descriptor: Valid
--- Flash Devices Found ---
W25Q64DW ID:0xEF6017 Size: 8192KB (65536Kb)
PDR Region does not exist.
- Erasing Flash Block [0x800000] - 100% complete.
- Programming Flash [0x800000] 8192KB of 8192KB - 100% complete.
- Verifying Flash [0x800000] 8192KB of 8192KB - 100% complete.
RESULT: The data is identical.
FPT Operation Passed
fs1:\>

12. Please press the "**Del**" or "**Esc**" key to BIOS setup menu to select "**Restore Defaults**" and then select "**Save Changes and Reset**" option to finish all BIOS flash processes.

Question: If I want to install the Windows 7, how to adjust the BIOS setting?

Answer: Please go to BIOS menu "**Boot**" page to change the **"OS Selection"** option from default setting "**Windows 8.X**" to "**Windows 7**" then switch to "**Save & Exit"** page to select "**Save Changes and Reset**" option.



Note:
Please visit our Portwell Download Center to get the Catalog, User manual, BIOS, and O/S drivers.
http://www.portwell.com.tw/support/download_center.php
If you have other additional technical information or request which is not covered in this manual, please fill in the technical request form as below hyperlink.
http://www.portwell.com.tw/support/problem_report.php
We will do our best to provide a suggestion or solution for you.
Thanks.